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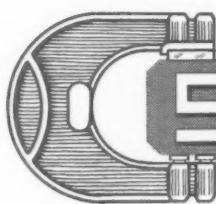
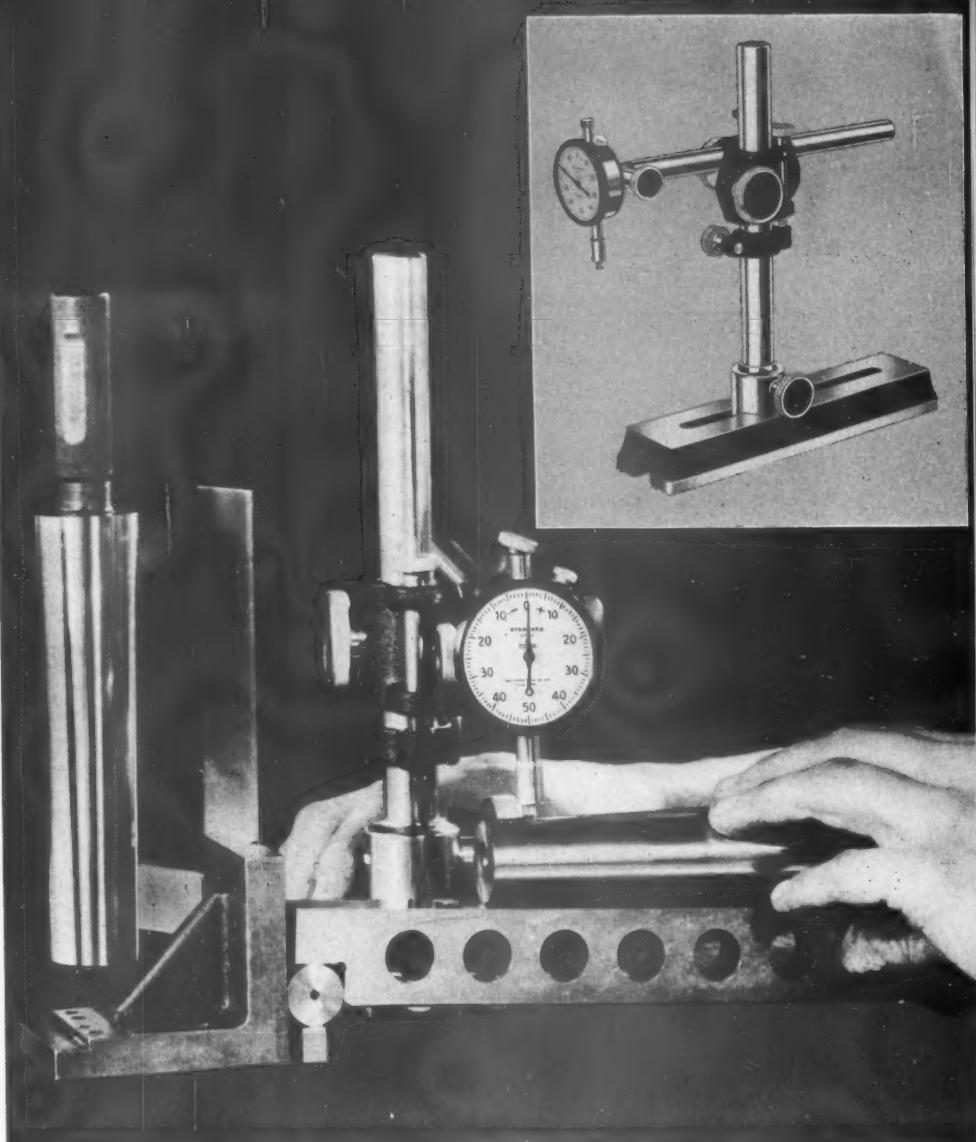
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No. 2

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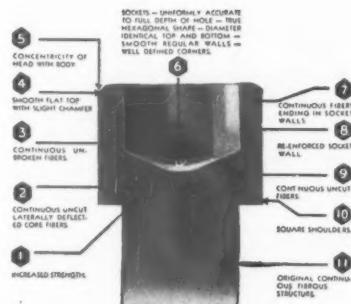
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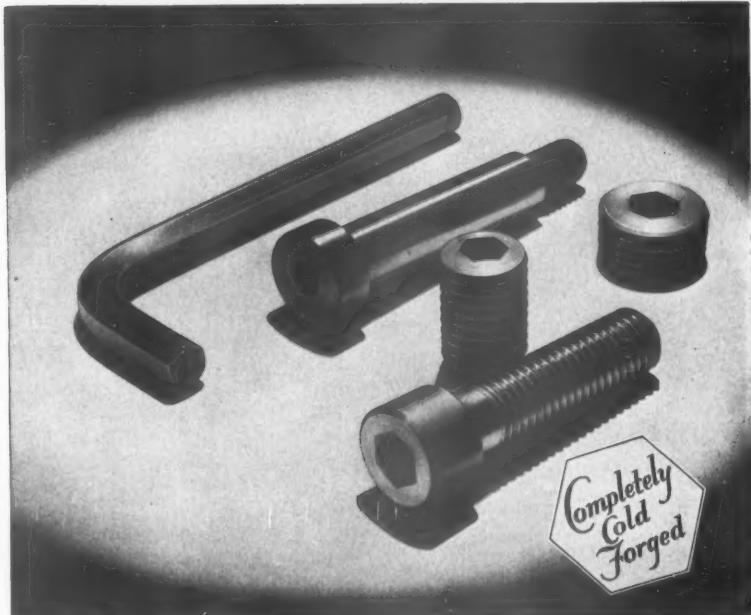
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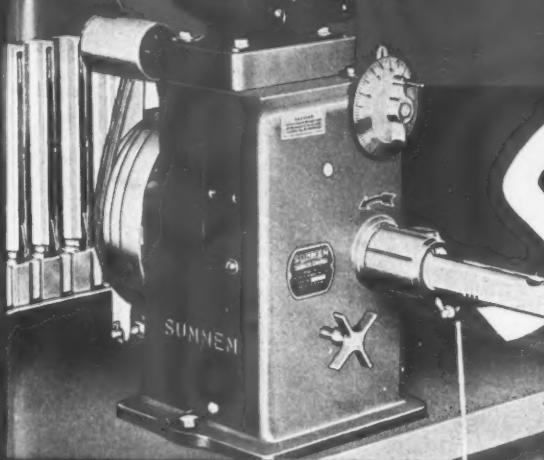
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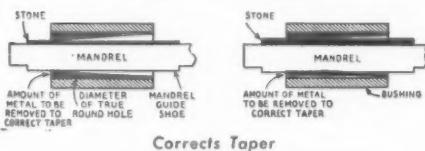
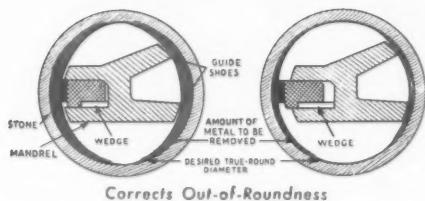
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# *Engineers and Civilization*

AN EDITORIAL

by

A. E. RYLANDER

ENGINEERS built the Pyramids, the seven wonders of the ancient world, the enduring Roman roads and the aqueducts that supplied the capitol of the Empire with water. Before the dawn of the Christian era engineering genius had driven an entering wedge into aviation, had shown the possibilities of steam power. Later, Leonardo da Vinci, poet, sculptor, and engineer, was to prove the versatility of the profession by his talents and interests. Whatever mankind has achieved, in material progress, may be largely attributed to the engineers, although kings and potentates have often as not arrogated the credit for accomplishment.

True, engineers have not always been the conceptors of their works, rather, have converted visions into realities. Jules Verne, for instance, inspired the modern submarine, as he fired the imaginations of practical inventors in divers fields; one may assume, however, that Verne was endowed with an engineering mind, else he could not have so clearly envisioned future developments. Famous as a writer, he might have remained obscure had he chosen engineering as a profession. For engineering history is not altogether a saga of success; the French, for example, did a monumental work in building the Suez Canal, failed to span the Isthmus of Panama, the jungle finally claiming their equipment. But American enterprise finally completed the job, our engineers at once licking a problem of construction and sanitation. Annihilating time and distance, they also brought health to the Canal Zone.

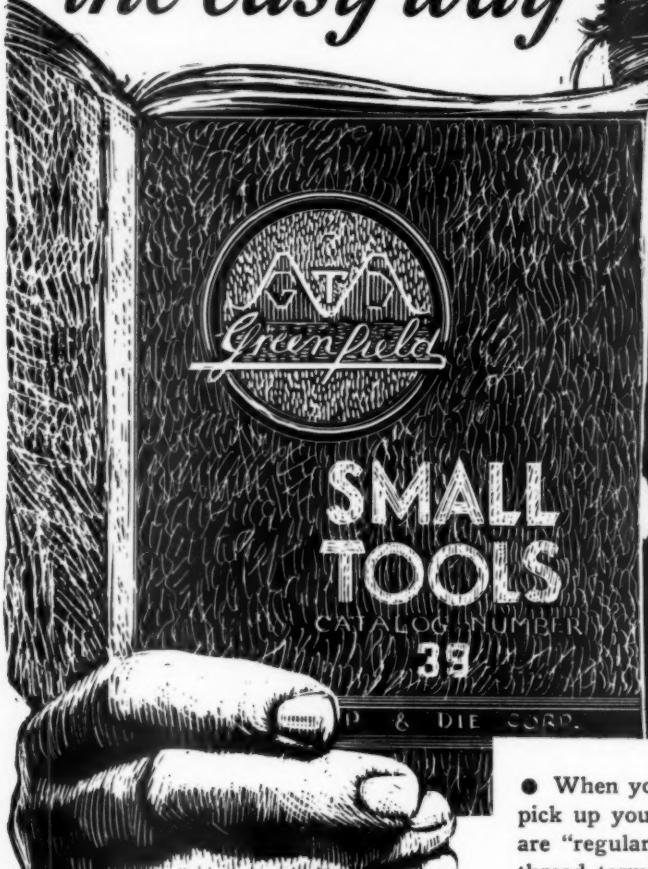
Despite occasional failures, often as not traceable to ambition that transcended the tools of manufacture, engineers have been in the vanguard of the forces of civilization, certainly have paved the road for the march of progress. The planning of cities, reclamation of land that sometimes changed geography, as in the case of the Zuyder Zee and our own vast power and irrigation projects, and now, in prospect, the damming of Gibraltar; surely nothing short of engineering vision and courage could broach such projects with any tangible hope of success. Explorers have blazed trails through jungle and wilderness, but engineers, spanning the world with liners and railroads, have been the prime movers of material progress. Science alone can penetrate the frontiers of the modern world.

All this, of course, deals with material things. Yet, we may claim cultural and spiritual progress for the engineers, too, as beauty in architecture, in the building of temples of worship, in the evolution of the art of printing; what newspaper could operate on a modern scale without the machinery created by engineers? The printed word is the greatest force in the world in shaping contemporary thought, in the education of the masses; one printed sentence, coldly incisive, can negate an oration that, playing on mass emotion, might otherwise decide the fate of nations. Where cold print, giving both sides of a controversial issue, can reach the masses of the people, there is hope for civil as well as international peace.

It is not our object, here, to eulogize the engineers or to make them out as supermen, rather, the intent is to impress a deep sense of responsibility; on our composite shoulders rests the future of material civilization. Insure that, and we need not worry overly about the cultural and spiritual phases. The masses of the people strive for material comforts, when these are achieved, they have time for cultural pursuits. Our job is to foster and promote material progress, but the time has come when we must have credit for our accomplishments. There are reasons.

We create the conveniences of modern civilization, tool them and cut costs so that the masses may enjoy them; in doing so, create jobs and promote national prosperity. Yet, we find ourselves falsely charged with creating unemployment; the composite machine that we have evolved is now attacked by a force that is the very antithesis of engineering progress. To repel this force we must (borrowing a phrase from one of our contributors) prepare to assume greater responsibilities. We must maintain our place in the vanguard of civilization, but, that means that the engineering world must pool its resources so that the masses of the people be educated to acceptance of a basic truth:—that without the machine our modern civilization would collapse. To propagate that truth we have at our command the most powerful agent known to man—THE PRINTED WORD. Let us devote it to the mutual advantage of ourselves and our fellow men.

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# GREENFIELD

# Why Buy New Machine Tools

By J. R. WEAVER  
PRESIDENT, A.S.T.E.

WHY do we buy machine tools? Last year the Westinghouse Company spent approximately \$5,000,000 on new machine tools and manufacturing equipment; and this year we have already spent about \$2,000,000. The primary reason, of course, for buying new tools on the part of any progressive manufacturing industry is to give our customers high-quality products at competitive prices. Other reasons contributing to such purposes are the creation of new products, redesign of existing products, shortening of the work week, and increased labor rates.

For instance, a machine-tool forum is a contributing factor to the necessity of installing new manufacturing equipment. Visitors hear our engineers tell about new designs in motors and control. They themselves contribute by suggesting new applications for motors and control. The result will be some change in design of motors and control to suit particular applications. This change will create the necessity for new manufacturing equipment.

## Suggested Improvements

One important condition in the use of machine tools should be given considerable thought by the machine tool manufacturers. How many realize what percentage of actual cutting or metal-removal time is obtainable from a modern machine tool? Recently, we have made a study to determine this condition, and have found that on many production machines the actual cutting time ranges from 15% to 30%. The other 70% to 85% is used in setup time, loading and unloading time, tool maintenance, changing of feeds, speeds, etc.

A great deal has been done by the machine tool manufacturer to build his machines more rugged in order to be able to increase speeds and feeds. It seems, however, that he has overlooked a most fertile field. This condition can be improved I believe by a thorough study of loading and unloading methods, proper location of feed and speed change levers, development of methods of changing feeds and speeds more quickly with less fatigue, and improvement in the method of setting up tools.

Most machine tools today are operated by individual motors. However, in most cases, the application of a motor and the control and wiring of the machine are left up to the user of the machine. If the machine tool manufacturers could standardize on an adequate method of mounting the motor and completely wiring the machine in their own factories, it would contribute to more efficient operation of the ma-

chine as well as reduce the cost of installing the machine.

We have tried such a procedure with several of the machine-tool manufacturers with little success. Sufficient thought has not been given to the wiring of the machine so that the wiring will conform to the safety laws of the state in which the machine is installed. Furthermore, trouble has been experienced in locating electrical difficulties in the wiring. Also, in many cases, the wiring has been placed in inaccessible locations. The design engineer should give motor application full consideration at the time he is designing the machine. The motor and control apparatus should be included as an integral part of the structure of the machine. Then, the location of push buttons and control apparatus should be such that they be within easier reach of the operator and the entire installation be made accessible and easily maintained.

## Why New Tools Become Necessary REDESIGN

The product engineer, whether it be motor, automobile, refrigerator or what not, is continually redesigning his product for the purpose of increasing its efficiency, reducing cost, or building into it sales appeal. In the redesign of this product, one of the major requirements is to build a better product for the same money or an equivalent product for less money. Naturally, the equipment and Tool Engineer is called into the picture to make his contribution to meet these requirements. The automotive industry and the refrigerator industry, for example, require new tooling programs every year, not only for the purpose of reducing the cost of the product but primarily because the engineer has brought out a new design which has certain features in it that make it a better product, and these particular features cannot be produced on the same equipment economically. Hence the necessity for new machine tools. True, in order to justify this added investment, there must be savings. These savings are principally due to the design of the product and not to the installation of the new machine tool.

Electrical engineers may redesign motors, changing some part so that instead of it being made on a turret lathe, it can be produced more economically on a multiple-spindle screw machine. That naturally obsoletes the turret lathe and requires the purchase of a multiple spindle screw machine. Many examples of this kind could be given because the design engineer is continually im-

proving his product to make it more efficient and to increase sales. The purchase of equipment to produce it may be only incidental.

## NEW MEASURING APPARATUS

When we consider improvements in products, we must consider as a contributing factor those products that are the influencing factor on other products. Here, we refer to measuring equipments. Today, an unskilled operator can measure to a higher degree of accuracy than was possible 25 or 30 years ago by the most skilled mechanic. The fact that we can measure on a production basis to a higher degree of accuracy again makes necessary the installation of improved equipment that can meet these greater accuracies. Recently, I saw a practical shop measuring device that would measure to a millionth of an inch. The machine-tool manufacturers will have to develop machine tools capable of producing such accuracies. Again, it will mean replacement of present equipment with equipment that is superior to anything that you are producing now.

Today, I have doubts whether anyone can give an accurate definition of "surface quality." In other words, "how smooth is smooth?" Before a standard can be established, a method of measuring is needed. Some progress has been made in developing measuring instruments for measuring smoothness. As these instruments are developed so that they can be used practically in the shop, it will be necessary for the machine tool to produce finishes to a measured standard. Product engineers will again be able to improve their designs and improve the efficiency by being able definitely to specify smoothness or surface finish.

## BALANCING PRODUCTION AND PURCHASING POWER

Many events during the last seven or eight years will have a very great influence on replacing old machine tools and the necessity for new equipment. There must be a definite relation between purchasing power of the individual and costs of a product. If the purchasing power of 1929 were compared to that of today, it would undoubtedly be found that the dollar went a great deal further in 1929. Apparently, this relation of purchasing power to cost has been definitely disturbed so that today our standard of living has been reduced. The contributing factors to this reduced standard of living might be for instance the shorter work week, which has been established at forty hours

(Continued on Page 40)

# TOOL HARDENING

In answer to the question, "Why should a small company do its own tool hardening?" Mr. Young states his belief that installing small atmospheric gas-fired furnaces enables the manufacturer to achieve under his own supervision almost any desired heat treatment of tools or small parts with convenience and saving of cost and time.

By  
W. WIRT YOUNG  
CONSULTING ENGINEER

A FEW years ago there was no answer when small companies asked, "Why should we do our own tool hardening?" Research and development, the eternal solutions to manufacturers' problems, have now provided a reply to this question by producing small atmospheric gas-fired oven furnaces, high temperature pot furnaces, tempering furnaces, and even high-speed furnaces, which do not require air under pressure, and in addition have the following advantages:

1. Low initial cost—Fundamental difference in burner application allows them to be sold for 20 per cent to 40 per cent less than air-gas furnaces of same size. Also, the elimination of blower equipment further reduces first cost.

2. Low installation cost—There is no blower to set or wire, and no air piping to install.

3. Low operating cost—The necessary use of light-weight insulating refractories have made these furnaces possible, and as a corollary have contributed to their economy. A box type oven furnace with a hearth size of 8 x 15 in. can be heated from cold to 1500 deg. F. with 50 cu. ft. of 530 B.T.U. gas and maintained at that temperature for 40-50 cu. ft. per hour.

4. Silence—Due to lack of pressure

air, there is no burner sound and no blower noise.

5. Flexibility—Atmospheric furnaces designed for tool hardening temperatures can be maintained as low as 400 deg. F. without backfiring.

6. Adaptability of control—Automatic control can generally be applied to atmospheric furnaces for 25 to 35 per cent less than the cost for air-gas furnaces.

With equipment of this type available it is small wonder that manufacturers are giving more consideration to doing their own tool hardening. Most small plant executives have built up their businesses on the basis of service, quality of product, and speed of deliveries.

Now they can obtain the convenience of doing their own hardening at a definite saving to them without sacrificing quality.

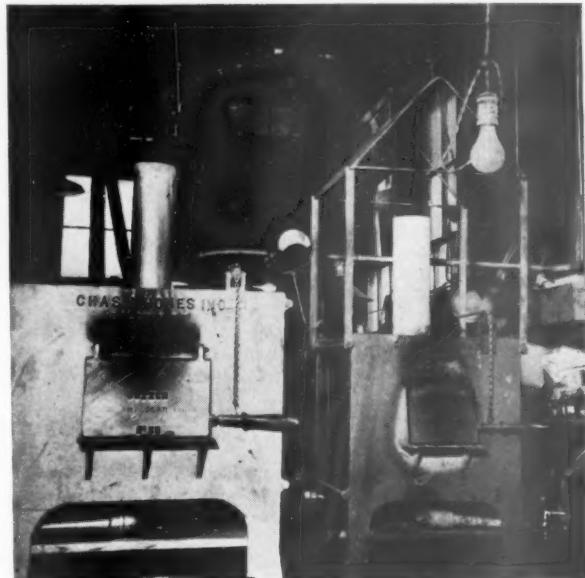


Figure 2. Close-up view of atmospheric oven furnaces

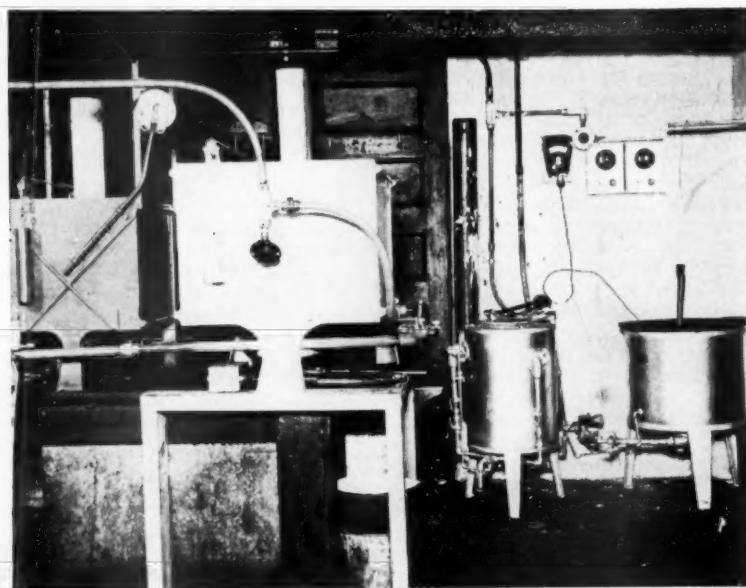


Figure 1. Two atmospheric ovens, and two pot furnaces

Development of atmospheric high-temperature furnaces has been made possible by the availability of light-weight insulating refractories, a product of the past few years. Light-weight refractories have decreased the necessary heat input for heating up furnaces so that it is now possible to burn the required amount of gas in the limited furnace volume without the use of air under pressure.

During the past year and a half, over 100 atmospheric oven furnaces have been placed in satisfactory operation in industry. While most of these have been used for hardening regular tool steel, they have also been applied to many other uses, including: 1. Small box carburizing; 2. Annealing of brass or steel; 3. Preheating of high speed steel; 4. Firing false teeth (with muffle); 5. Bright annealing (with H<sub>2</sub> in muffle); 6. Firing glassware.

Due to the method of firing, this type of furnace is at present limited in width, but not in length. Most of these furnaces in use do not have over a 9-in. hearth width, although special sizes have been designed up to 15 in. wide. Lengths up to 7 or 8 ft. have been found

satisfactory. Within these width limitations, temperature uniformity is very good, speed of heating is excellent, gas consumption is low, and furnace atmosphere is satisfactory for usual hardening operations. Interesting data on the popular sizes of atmospheric oven furnaces are tabulated on the following page.

Figure 2 shows two such furnaces installed in the hardening room of a nail manufacturing company. The furnace on the right has a  $4\frac{1}{2} \times 9$  in. hearth, and is equipped with indicating pyrometer; the larger furnace has a hearth area of  $8\frac{1}{2} \times 14\frac{1}{2}$  in., and has fully automatic temperature control. Working range of both is 400 to 2000 deg. F.

Originally, high temperature atmospheric pot furnaces were underfired. This method of firing was found to be satisfactory for aluminum melting, lead hardening, and low temperature salt operations up to 1200 deg. F. Inherent difficulties were found in trying to operate these with hardening salts up to 1600 deg. F. Heating-up time was slow, and the burners were likely to become clogged with scale from the pots. These difficulties led to the de-

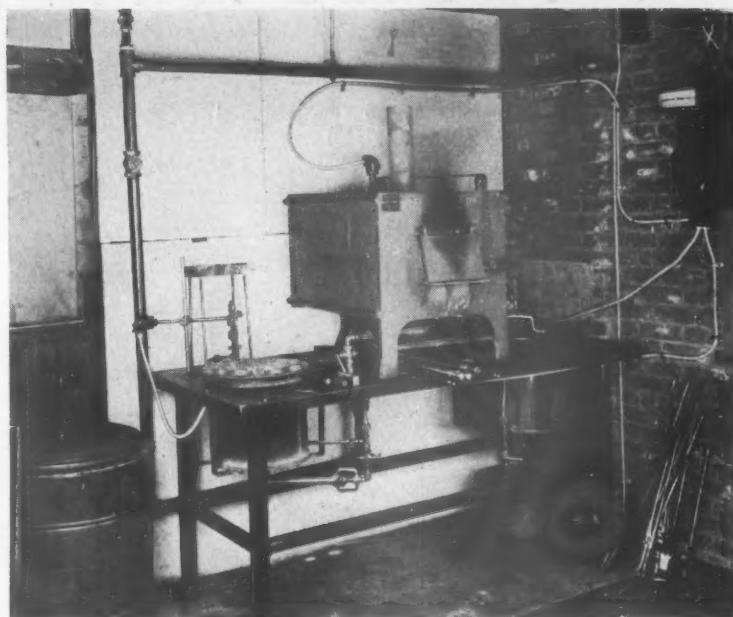


Figure 3. Atmospheric tempering, oven, pot furnaces

#### OVEN FURNACES—HEARTH SIZE

Cu. ft. of 530 B.T.U. gas to heat up to 1500° F.

$3\frac{1}{2} \times 7$  in.

$4\frac{1}{2} \times 9$  in.

$8\frac{1}{2} \times 14\frac{1}{2}$  in.

Cu. ft. of 530 B.T.U. gas to hold at 1500° F.

15

20

30

Time to heat to 1500° F.

20 c.f./hr.

30 c.f./hr.

50 c.f./hr.

20 min.

20 min.

20 min.

#### POT FURNACES—POT SIZE

Cu. ft. of 530 B.T.U. gas to heat to 1600° F.

$8 \times 12$  in.

$10 \times 14$  in.

$12 \times 16$  in.

Time to heat to 1600° F.

190

260

450

Capacity in lbs. of salt.

1 hr. 15 min.

1 hr. 20 min.

1 hr. 30 min.

Production in lbs. of steel per hr.

30

65

120

30

50

80

velopment of tangential top-fired furnaces which are now widely used for temperatures up to 1600 deg. F. on the following operations: 1. Neutral salt hardening; 2. Case hardening with salt; 3. Secondary treatment of high speed steel; 4. Blacking; 5. Bluing; 6. Salt annealing; 7. Lead hardening; 8. Aluminum melting; 9. Tempering.

The advantages of salt baths for various operations are too numerous to mention here. The advantages of atmospheric pot furnaces for salt baths are low initial cost, low operating cost, simplicity, and silence. Cast-iron pots are used for aluminum melting and lead hardening. Pressed steel pots are generally used for salt baths, except where hours of production warrant the use of heat-resisting alloy. While various size furnaces are available, the table above gives operating data on the three sizes most in demand.

Low temperature atmospheric pot furnaces of both the round and rectangular types have been in use for a number of years for salt tempering, oil tempering, and soft metal melting. They have become practically standard tempering equipment.

Simple and inexpensive automatic control can be applied to these furnaces with bulb type thermometer controllers.

At present, the atmospheric high-speed furnace necessitates a muffle, and is limited in hearth size to about  $8 \times 13$  in. It is capable of producing work comparable to electric high-speed furnaces without gas curtains, is more

economical to operate and purchase, and is much faster. Used in conjunction with diamond blocks, it is capable of producing very satisfactory work on small tools.

(Continued on page 34)

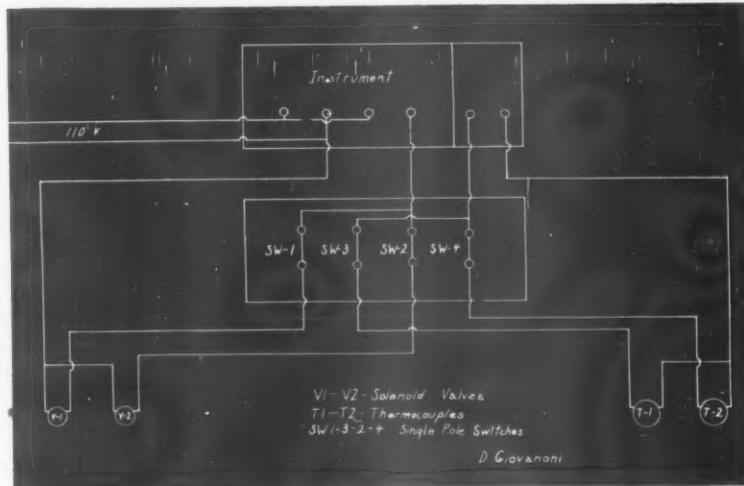


Figure 4. Wiring plan



## Carboloy Company Opens New Detroit Plant Consolidating All Manufacturing Facilities

ON June 1st Carboloy Company, Inc. formally opened its new plant and general offices in Detroit, Michigan, for the manufacture of cemented carbide products.

This new plant, the largest cemented carbide plant in the United States, embraces a total area of 121,750 square feet. All manufacturing facilities formerly divided among Carboloy plants in Cleveland, Ohio, Detroit, Michigan, and Stamford, Connecticut are combined in this new plant.

According to W. G. Robbins, President of Carboloy Company, the facilities provided in this new plant are indicative of the anticipated trend of cemented carbide use. "Equipment now installed and planned for the immediate future" Mr. Robbins stated, "is capable of producing approximately 10 times the present amount of Carboloy currently consumed by industry. Supplementary reserve space also provides for expansion considerably beyond this established potential capacity."

The plant is located on a 40 acre site situated on East 8-Mile Road, one quarter mile east of Van Dyke, just beyond the outskirts of Detroit. A two story Administration Building, with an area of 35,556 square feet, houses all general office departments such as sales, en-

gineering, drafting, purchasing, accounting, etc. This structure is of reinforced concrete, fireproof construction, completely air-conditioned, with acoustical ceilings in halls and offices.

The factory, which is connected with the rear of the Administration Building, is a monitor-type, one story, all-welded, steel and brick frame structure, covering an area of 88,197 square feet. It contains complete facilities for the manufacture of Carboloy from the raw materials through to the finished tools, dies and wear resistant parts.

### Research Laboratories

To control this production, as well as for purposes of product development, a completely equipped Research Laboratory is conveniently located within the factory building. This provides for numerous functions such as particle counts of the powdered metal under magnifications as high as 3000 diameters, microscopic structure analyses of hardened Carboloy bars, chemical analyses, hardness, density and transverse rupture strength tests, special process and equipment development, and numerous other functions.

The importance of these laboratories is apparent by the fact that approximately 12 tests are conducted at vari-



Top—Aerial photograph of the new Carboloy plant.  
Below—Pressing Carboloy die nibs on a continuous press preparatory to the semi-sintering and sintering operations.

Standard blanks and nibs are formed on this equipment at the rate of several hundred an hour. 300-ton presses handle large ingots and die nibs.

ous stages of production during the processing of each new "batch" of Carbloy. Maintenance of a sample file in which 500,000 grams of Carbloy, permanently identified for re-check purposes, has been accumulated to date, indicates the unusual precautions taken to control the processing.

#### Powder-Metal Department

The Powder-Metal Department, or "Metal Room," as it is called, is reached through air locks, installed to insure uniform operation of the air-conditioning system which closely controls atmospheric conditions in this section. Constant temperature and humidity levels are maintained here for accurate weighing and blending of the powdered metals, inasmuch as some of the materials are hydroscopic. Extreme cleanliness is also essential to prevent contamination of the powdered metals.

Equipment in this department includes ball mills, crushers, sifting and mixing units. Although only one third of the Metal Room is occupied at present, equipment now installed is adequate to provide up to several million grams of Carbloy monthly. A few of the units, in fact, have an individual capacity of several times that quantity. The recently introduced, 100-watt Cooper-Hewitt fluorescent tubes made especially for production precision operations, are used to illuminate this department. These provide 40 to 50 foot-candles at the working plane.



General factory view, showing approximately one-third of the total manufacturing area of 88,197 square feet. The Milling Department is shown in the foreground in front of the Inspection Room, and the Grinding Department and Die Department are located to the rear.

#### Metal Presses

After the initial powdered metal processing, the powdered metals are received in the press room, which is in a connecting wing of the "Metal Room."

Two 300 ton presses, having a capacity of several million grams per month, provide for the production of ingots up to 20 square inches in area. Additional

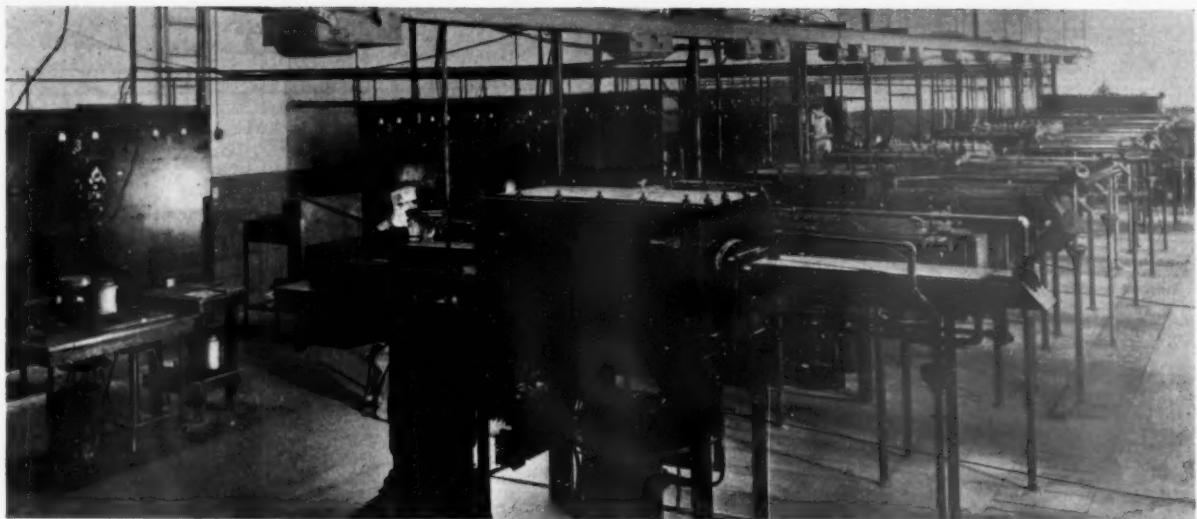
facilities available provide for the production of larger, or unusually shaped, sizes when required.

Two supplementary continuous presses forecast the unusual quantity production economies that will become possible as standardization of grades, shapes, and sizes progresses. These presses—with a capacity of several



The Powder Metal Room is completely air-conditioned to maintain a constant level of humidity and temperature. This permits accurate weighing and blending of the materials, some of which are hydroscopic in nature. Air-conditioning also provides for the cleanliness

necessary to avoid contamination of the powdered metals. A new type of fluorescent tubing provides up to 50 foot-candles at the working plane.



The Furnace Room of the new Carboloy factory is equipped at present with a battery of 18 electric furnaces for reduction, carburizing, semi-sintering and sintering processes, having a capacity of several million grams monthly. Special overhead air filter is installed to prevent

contamination of powdered metals. Many of the furnaces have such features as stoking units, controlled heating and cooling cycles, etc. Control panels at left will contain temperature recording control instruments, and individual hydrogen control meters for each furnace.



A "boat" of pressed Carboloy rings entering the electric furnace for the semi-sintering process.

hundred pieces per hour—press individual pieces requiring no additional forming operations. Easily visualized are the savings compared to the time necessary to individually shape small pieces out of the large ingots produced by the 300-ton presses. Storage bins in this department have a capacity of 50,000,000 grams of raw and processed cemented carbide powders.

#### Furnace Room

##### Carburizing — Sintering — Brazing

Eighteen electric furnaces for reduction, carburizing, semi-sintering, and sintering, processes are installed in the furnace room. Supplementing these, several additional furnaces are maintained in other departments for brazing of tools and hot forging of die cases. Some of the units have a reserve capacity up to several million grams monthly. Quantity handling is amply provided for in many of the furnaces through such features as stoking units for semi-continuous operations, controlled heating and cooling cycles, etc.

Control panels adjoining the furnaces contain temperature recording control instruments, and individual hydrogen control meters for each furnace.

#### Hydrogen Manufacturing Facilities

Hydrogen is used for all processes requiring a non-oxidizing atmosphere in the processing furnaces. This is manufactured in the plant by means of special equipment designed to produce hydrogen with a high degree of purification and dryness. Two generating

into the shape desired. A wide variety of blanks, ranging from extremely thin, delicate parts to large die nibs several inches in diameter are turned out shaped and sized close to the finished dimensions.

An average stock of 250,000 grams of Carboloy cemented carbide is maintained in this department in the form of semi-sintered ingots and cylindrical blanks.

#### Milling Department

While the Carboloy blank is being processed, the steel shank in which it will be brazed is being prepared in the Milling Department. Here, stock is cut to length, and recessed to accommodate the Carboloy insert. Equipment such as multiple spindle milling machines, hydromatic milling machines, hydrodynamic milling machines with pneumatic fixtures, universal backing off lathes, screw machines, shapers, etc., provides for both quantity production and special production orders. Lighting, averaging 50 foot-candles at the working plane in this and other de-



Grinding an intricate form into soft, semi-sintered pieces of Carboloy preparatory to final sintering.

units with 40 cells have a total capacity of 1250 cu. ft. per hour. Storage is provided in a spherical tank which can hold approximately 100,000 cu. ft. at 15 lbs. pressure.

#### Forming Department

Milling machines, grinders, lathes, cut-off equipment and specially designed radius machines, shaped die forming equipment, etc., are employed in this department to form the rough semi-sintered ingots and special blanks



Surface grinding a tool shank preparatory to milling the recess into which the Carboloy tip will be brazed.

parts, provides excellent working conditions for precision operations.

#### Grinding Department

Batteries of hydraulic surface grinders, universal internal and external grinders, special cutter grinders, diamond lapping machines, etc., receive the Carboly tools as they come from the brazing department and perform the final grinding operations necessary to produce a finished tool ready for use. Tolerances as close as .0001" are often required on this work.

#### Carboly Die Department

At this point in the manufacturing process, Carboly wire, bar and tubing dies are segregated from the production of Carboly tools and other Carboly products. Operations in this department include preparation of casing to receive the Carboly nib, rough drilling, lapping and finishing of round hole dies. Adequate facilities are also maintained for sectional and shaped die manufacture. New, specially designed machinery is now installed for practically automatic operation in the production of shaped dies.

Of particular interest are the facilities for hot forging the die casings around the nib—an exclusive Carboly process, one 250 ton, and one 50 ton percussion press are, at present, installed for this operation. The process provides complete support for the Carboly nib except at the hole through which the wire, bar or tubing passes. Through controlled heat treatments and selection of proper casing metals, the internal pressures set up by the drawing

operations for which the dies are used, are balanced with external pressure of the casing against the Carboly nib.

#### Inspection Department

A completely equipped Inspection Department provides for routine inspection operations, such as hardness testing, visual surface examinations, specification checking, etc. For exacting inspection of intricately shaped Carboly tools and parts, such as circular and flat form tools, a projectograph, providing magnification up to 30 diameters is maintained.

All of these routine inspection operations on the finished Carboly product, supplement the series of approximately 12 check-tests made at various stages of the manufacturing operation.

#### Maintenance and General Facilities

Indicative of the many economy features that have been built into this new



Hot forging the metal casing around the Carboly die nib on a 250-ton percussion press.

Carboly plant is the special provision for water salvage. A series of covered trenches built into the floor of the plant, direct all drainage water, except that  
(Continued on page 38)

Milling a slot in the steel shank of a centerless grinder rest, into which the Carboly insert will be brazed.



The Grinding Department: Batteries of surface grinders, cylindrical grinders, special tool grinders, and diamond lapping machines receive the Carboly tools as they come from the Brazing Department and

perform the final grinding operations. The lighting in this department, as in most of the factory, provides up to 50 foot-candles at the working plane.

# "So on with it"



**Stanley S. Johns**  
Chairman  
Baltimore Chapter



**B. A. Page**  
Chairman  
Bridgeport Chapter



**Otto W. Winter**  
Chairman  
Buffalo Chapter



**C. B. Cole**  
Chairman  
Chicago Chapter



**Louis L. Weber**  
Chairman  
Cincinnati Chapter



**George J. Hawkey**  
Chairman  
Cleveland Chapter



**Earl V. Johnson**  
Chairman  
Dayton Chapter



**C. Theide**  
Chairman  
Detroit Chapter

Chapter Chairmen in each of the twenty-six chapters of the American Society of Tool Engineers seem to have taken the above phrase from the A.S.T.E. Theme Song very much to heart. Just coming into office, through the recent elections, each has expressed the hope and aspiration to build his chapter in membership as well as in its effectiveness and value to the membership.

Following are a few statements that chapter chairmen have made, all indicative of "another year of progress" in the history of the American Society of Tool Engineers.

A brief statement of purpose as it relates to the Baltimore Chapter brings up a matter that is being given careful study—to determine the most effective method that may be used to further the interests of our organization.

We believe that the Tool Engineer is going to find 1939 an exceptional year for the art. Quite probably he will come closer to recognizing the obvious advantages that an association such as ours offers than ever before. With this in mind, Baltimore Chapter is going to make a determined effort to build up its membership during the present year.

To gain this end we are emphasizing to each member the importance of making known the benefit of membership to eligible non-members that we may contact. Careful attention will be given as usual to our meeting's program to insure interesting, lively meetings, also we propose to promote to a larger extent the social activity so essential to the development of a live organization.

The formation of a Speaker's Club is another innovation that we hope to get under way in the near future, and a meeting has been called to discuss this and other matters relative to chapter activity.

**Stanley S. Johns**  
Chairman, Baltimore Chapter

One thing that we have already done at Buffalo is to change the name to the Buffalo-Niagara Frontier Chapter. In doing so we intend to encourage more members from Niagara Falls, Lockport, the Tonawandas, etc.

Another thing we intend to do this year is double our membership and we are off to a good start having obtained 14 new members in the first month.

We have some rather ambitious plans for our monthly meeting programs. In June, we have Dave Wallace coming here to talk on "Superfinish." The outstanding program is going to be in June and we will have some announcements out on that.

Suffice to say that the Buffalo Chamber of Commerce and the engineering foundation of Buffalo which incorporates all the engineering societies of Buffalo are cooperating and we expect to have several hundred people at that dinner. We have two outstanding speakers lined up for the occasion and have made arrangements for them to circulate on through the State so that the other New York Chapters will have the benefit of hearing them.

Another thing that we are doing on membership is to allocate membership committeemen to each major plant and each district for small plants to concentrate our membership drive. In addition to this, we have two membership teams lined up that are vying with each other; each team is composed of several squads and the losing team has to swing a party for the winning team at the end of the membership drive.

We had a meeting on March 27 exclusively for members and their prospects for membership which helped a great deal to stir up interest around here in joining up. A considerable amount of important items of business were covered at this meeting and a lot of plans laid. There was considerable discussion on whether or not we should hold our meetings at a place where liquor is served or not. The vote finally turned out to have these meetings

# th the A. S. T. E."

at a place where there was no liquor. The feeling was that the boys could find plenty of places to buy a drink if they wanted to and in an effort to encourage young men, students and if a member wanted to bring his son to one of the meetings the absence of liquor would create a better professional atmosphere.

**O. W. Winter**  
Chairman, Buffalo Chapter

We are going to make a very strong membership drive among the executives of the various manufacturing plants in Chicago. We have some wonderful potential members in these plants and we are going to make every effort to get them into the A.S.T.E. fold.

In addition we are planning a very interesting program for the year. We are attempting to secure speakers on subjects that will be of vital and pertinent interest to our membership. Something that will be of direct benefit to them and their work. In addition, we are planning several social events. Among them a picnic for the members and their families. This will be an all day affair and from the preliminary view I have had of the plans it promises to be a very interesting event. We are also planning several golf tournaments this year as the members enjoyed the ones we had last year very much.

Our chapter is hoping that the 1941 convention can be held in Chicago as we believe we have every facility to put on a wonderful show.

**C. B. Cole**  
Chairman, Chicago Chapter

Our first anniversary dinner to be held June 6th will feature Jim Weaver as dinner speaker and Geo. Seyler of The Lunkenhimer Co. as Meeting Speaker, his subject will be "Where does the Tool Engineer Fit In" about ten or more exhibits, a \$1.50 dinner (to the members at \$1.00, to non-members for \$1.25).

An Educational Committee has been appointed, consisting of Dr. Max Kronenberg, Research Engineer of the Cincinnati Milling Mach. Co. and Thomas Kling Asst. Supt. of Lodge & Shipley. A series of discussions is being inaugurated on "Single Point Cutting Tools." Dr. Kronenberg will lead the first discussion and will develop logarithmic charts in regard to speeds, feeds, rake angles, etc. This should prove very interesting. These conferences will be held in the Air Conditioned Conference Room of Lodge & Shipley.

Charlie Carr, Vice Chairman of the Entertainment Committee in charge of Golf activities is organizing a Golf League for the members and we should thus be able to keep our members together during the summer.

Our goal of 100 members should be reached by our First Anniversary Meeting. Chas. Black of the American Tool Works, Chairman of the Membership Committee has (with the help of his committee and the chapter in general) been bringing them in large numbers.

Our Industrial Relations Committee has had nothing to do so far, as we have not had a member out of a job.

Our Meetings Committee has the meetings arranged from now until the summer. During the summer they will meet and arrange the schedule for next Fall and Winter. This committee consists of Fred Shoefield, Works Mgr. of Lodge & Shipley, Henry Pierle, Sales Mgr. of R. K. LeBlond, John Elfring, Chief Tool Designer of Milling Mach. and R. W. Koeler, Supt. of American Tool Works.

Our constitution and By Laws Committee, headed by Al Schlattner of the Printing Machine Co., is awaiting the new Constitution so that they can go to work on it.

We expect a prosperous year with an increasing number of members who will be glad they are members.

**Louis L. Weber**  
Chairman, Cincinnati Chapter



**J. R. Lynch**  
Chairman  
Elmira Chapter



**Ray H. Morris**  
Chairman  
Hartford Chapter



**Eldred A. Rutzen**  
Chairman  
Milwaukee Chapter



**O. R. Reller**  
Chairman  
Moline-Tri-Cities Chapter



**Herbert D. Hall**  
Chairman  
New York-New Jersey Chapter



**John A. Strecker**  
Chairman  
Philadelphia Chapter



**J. P. Wiley**  
Chairman  
Pittsburgh Chapter



**J. A. Elwood**  
Chairman  
Racine Chapter



**George E. Codd**  
Chairman  
Rochester Chapter



**George C. Johnson**  
Chairman  
Rockford Chapter



**E. W. Ernest**  
Chairman  
Schenectady Chapter



**E. A. Doogan**  
Chairman  
St. Louis Chapter



**George W. Wise**  
Chairman  
Twin-Cities (St. Paul-Minneapolis)  
Chapter



**A. H. Mitchel**  
Chairman  
Syracuse Chapter



**Arthur Bok**  
Chairman  
Toledo Chapter



**Gordon L. Reed**  
Chairman  
York (Central Penna.) Chapter

During the coming year Elmira Chapter hopes to more than double its present membership and to convince the industries represented in our chapter of the advantages afforded by the A.S.T.E. Data Sheets. The proposed plan of having our speakers cover the five chapters in this area from Monday through Friday of the same week should assure us of carefully selected programs, arranged well in advance.

**John R. Lynch**  
Chairman, Elmira Chapter

Based on past experience, our Executive Committee is unfiring in its effort to procure the best possible speakers on subjects of interest to Tool Engineers. To arrive at that objective, we find it necessary to have our program complete before mid-summer, in order to give the desired speakers plenty of time to arrange their schedules. We followed this plan last year, and the result was large and enthusiastic turnouts of members and friends interested in our activities.

We have also found it advisable to amplify this high caliber of speaker with coffee talks by individuals from other professions. Thus far, we have been unusually successful in attracting the type of speaker who commands considerable respect in the vicinity, with the result that our dinner attendance has been stimulated considerably. In following these two procedures, we do not find it necessary to put on any aggressive membership campaigns. While it is true that we are passing up an opportunity to solicit members, we find it to be a wise practice, in New England at least to let an individual who has attended a few of our meetings sell himself on the idea of membership. I have observed this phenomenon for the past two years, and at the moment can't recall any meeting at which we could not announce anywhere from four to fifteen applications. Naturally you will understand that a growth in membership by this method eliminates a great many controversial meetings as to qualifications. We can see by our records that at least eighty-five per cent of our membership is definitely connected in one way or another with the Tool Engineering profession.

In the way of social functions, we have two of such a year. We hold an annual spring outing in May, and this year we will hold a clambake or some such gathering in early October. For the past two years we did have indoor parties in February, but the winter season is so filled with other indoor activities that we feel we want to do anything we can to stimulate outdoor activities as long as the seasons permit.

In the way of extra curricular activities, we plan to pay a bit more attention to the apprentices and State Trade School students and instructors. We have in mind inviting a representative group from this type of individual to one of our meetings, with the idea in mind of stimulating some interest in a Student or a Junior Chapter.

That, in general, is the horizon we are aiming for. Because our Executive Committee are on the alert for timely topics of interest, it is difficult to foretell definitely what other attractions we may develop to boost the progress of the A.S.T.E. You may be assured, however, that news of this Chapter will not be lacking as the year progresses.

**Ray H. Morris**  
Chairman, Hartford Chapter

With reference to a statement I can only say that the officers and chairmen of the committees endeavor to make Milwaukee Chapter a more fertile, technical, educational set-up for its members, and bear in mind that it is quality not quantity which will make Milwaukee Chapter a success.

**Eldred A. Rutzen**  
Chairman, Milwaukee Chapter

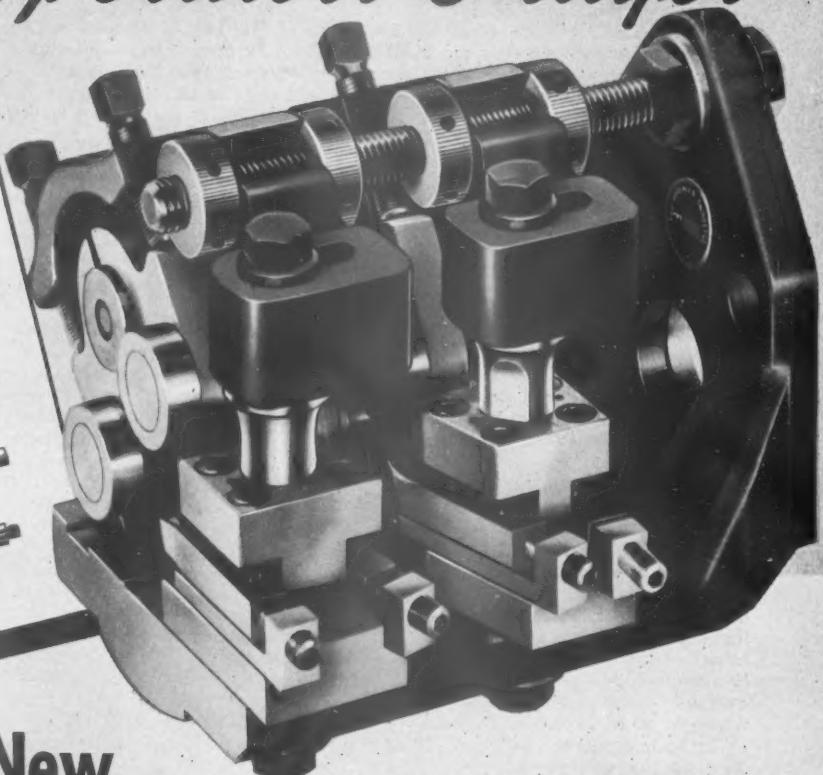
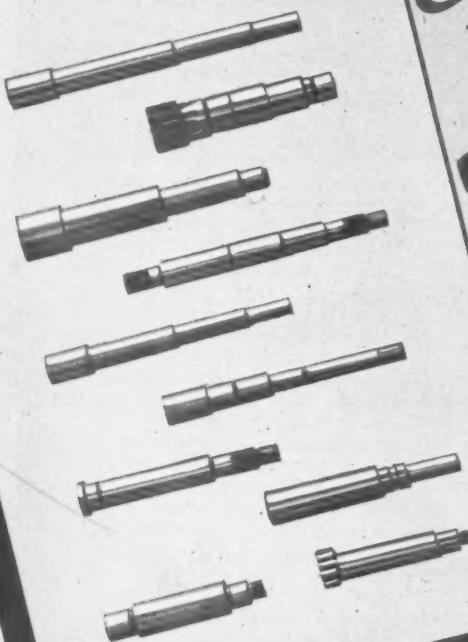
I have listed below, a few of the activities which are planned during 1939 for Schenectady Chapter No. 20 of the America Society of Tool Engineers.

The advisability of holding a summer outing or possibly a golf tournament is being considered and will be referred to the membership shortly for their approval.

(Continued on page 38)

# The Answer to a Turret Lathe

## Operator's Prayer



### A New MULTIPLE CUTTER TURNER That Really Works!

## Easy to set up... Easy to Hold Sizes

• We mean no disrespect to the faithful old multiple cutter turner now in your shop. But here's a new tool that *really can take fast multiple cuts with heavy feeds.*

Carbide turning is very practical with this new Multiple Cutter Turner! Accuracy under heavy cuts at high speeds is maintained by the rigid design of the roll brackets fastened to the cutter block and braced against the turret.

Cutters are independent and can be changed or added without disturbing cutting diameters already set. As many as four diameters can be turned at the same time.

This tool is easily and quickly set up, and

will greatly cut your production time on shafts, studs, bolts, etc.

We'll be glad to demonstrate this improved turret lathe tool or any of the many others recently brought out by Warner & Swasey. Just call in your local Warner & Swasey representative or write . . .

The most complete and modern line of turret lathe tools in the world is covered in the new Tool Catalog and Manual. It will be sent on request.



**WARNER  
&  
SWASEY**  
Turret Lathes  
Cleveland

# Impressions of a Tool Engineer Abroad

By

WALTER F. WAGNER  
PAST PRESIDENT, A.S.T.E.

MANY A.S.T.E.ERS will recall the departure of Mr. Walter Wagner for Europe immediately following the Machine & Tool Progress Exhibition, and at the end of his term as president of the American Society of Tool Engineers. Mr. Wagner was sent to Europe on a mission which will have to remain a secret, but the many interesting impressions he gained while "across" he is glad to give to readers of "The Tool Engineer," members and friends of A.S.T.E.

"Wherever I went in both England and France I noticed no great anxiety or fear as regards war. There are, however, many preparations being made if such an event should transpire. Everybody has a gas mask handy. Schools are maintained for instruction in air-raid precautions. Most big plants have gun mounts on them or near them. In some plants over there specially built steel shelter sheds are being built to provide bathing facilities in case of an attack with mustard gas. Mustard gas destroys clothing and will eat through the skin unless it is washed off immediately in special solutions.

"Everywhere you go you see trenches—particularly in France—all the parks and parkways are tunneled. It would seem to me that virtually everything in the larger cities is honeycombed with tunnels which would be used for refuge in case of an air attack. This tunneling has been going on for years and the average Frenchman knows exactly where to go in case of an air raid.

"In France there are plenty of soldiers training everywhere; in fact, you see soldiers training on many vacant lots. I saw thousands of soldiers drilling on an island in the Seine River across from a plant, located approximately fifteen miles out of Paris in the town of Asnières—a suburb of Paris. French soldiers all look very good and appear to be seasoned men. The dark-skinned French Moroccans were a picturesque sight in their native garb.

"While in France I took an interesting trip through the battlegrounds. There were a great many machine guns still lying on the ground, especially at Belleau Woods. In every direction there are still many miles of trenches, and many of the barbed-wire entanglements have been left. The French have made some attempt to dig up the shells, and you see them stacked up in huge piles. There were a number of German tanks with engines intact which had been abandoned at the time of the armistice. I also spent some time at Reims. The Cathedral of Reims is full of bullet holes, although it has been fully restored—even statues inside are peppered with bullet holes. We made an interesting trip into the wine cellars under Reims, and I counted exactly 80 steps down and was surprised to learn

that the temperature remains at approximately 55° at all times.

"My reaction while in France was very definitely that the French are going right on with their usual occupations, but in any event are getting very ready for war if it should come.

## Tool Engineering in France and England

"Of all the machine tools I saw, I would estimate that at least 75 per cent were American made. We also saw many machines American made but which we have never seen over here—specially built machines for foreign trade. France seems to import more American machines, although there are a great many American machines to be seen in England also. The English are splendid machine tool builders and you see many of their machines in other countries. Most of the machines that I saw were not of the single-purpose type machine which we are so familiar with over here. Labor rates over there are considerably lower than they are here, and often you will see two men operating a radial drill. An unusual practice, I observed over there and in contrast to our own practices, was the changing of jigs and fixtures on a given machine and in some cases changing the grinding wheels to accommodate altogether different types of work being handled on the same machine.

"In many cases we noticed that automobile production had been stopped or seriously curtailed in favor of aircraft manufacturing. In connection with aircraft the government usually develops the plans, specifications, etc., and a Bureau of Air Ministry is responsible in both England and France for the inspection of the component parts being made by the many plants engaged in aircraft production.

"Another interesting observation we made was that the government has located most plants outside of the larger industrial centers insofar as possible and in such a way that the crippling of any one plant would not seriously affect production. Where one plant is engaged in the manufacture of certain parts, you will usually find another plant doing the same type of work possibly fifty miles away.

## The Standard of Living

"England is really a very beautiful country, but I gained the impression that taxes are terrific. Almost every-

body rides a bicycle. In view of the much lower standard of living which we noticed over there, I could not help but be reminded of the recent report of our Fact Finding Committee and the relationship of machines to employment and our standards of living. I could not help but think, too, that if the enormous amount of money they are spending for arms over there could be spent for the betterment of the people and the raising of standards of living, what a tremendous benefit it would be—if the thousands of machines they have turning out armament could be used in the production of parts and products, as we know the mass manufacturing industries in this country, to enrich the lives of the people over there.

"Factories over there tool up pretty much the same as we do, except that they seem to be more elaborate on tooling up for low production. I saw plenty of radial drills but I do not believe that I saw a single multiple head. I did see, however, quite a few real expensive open-side planers—machines similar to those we see in tool rooms over here—many of them doing small jobs like milling crankcases or motor blocks. They seem to do things different from our usual practice, but for their slower production and with their low labor costs no doubt their methods are justifiable.

## Meets Bert Carpenter

"While in Paris I stayed at the Le Grande Hotel and was pleased as well as surprised to meet Bert Carpenter, former president of A.S.T.E. Bert has been in France some time and has missed many of his friends in A.S.T.E. He particularly regrets that he cannot participate in the golf tournaments which he so enjoyed at Detroit Chapter. Bert is now married and living in Paris, and both he and Mrs. Carpenter are learning French in a school there.

"An interesting sidelight in which readers of 'The Tool Engineer' may be concerned about was that the average wage of a draftsman in England or France would equal only about \$22.00 per week in our money. Everywhere you go there are comparatively few automobiles with a great many bicycles, and the probable conclusion is that there is no need for a great deal of money and everyone seems to be happy and the extra exercise they receive from peddling bicycles seems to put them in pretty good physical condition, I would say.

"Blueprints in England read the same as ours, while in France the metric system is used, necessitating the use of a constant to change metric into our system."



# STARRETT and LAST WORD DIAL INDICATORS

Choose STARRETT Dial Indicators for production inspection operations or for mounting on machine tool spindles, jigs, fixtures, etc. Choose LAST WORD Dial Indicators for maximum adaptability to varied gaging operations. Both are available in a complete range of models and dial calibrations. Write for Starrett Dial Indicator Catalog "T," Second Edition.

**THE L. S. STARRETT CO., ATHOL, MASS., U. S. A.**

*World's Greatest Toolmakers — Manufacturers of Hacksaws Unexcelled — Steel Tapes, Standard for Accuracy  
Dial Indicators for Every Requirement*

*Standardize on*

**STARRETT TOOLS**

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# CHAPTER DOINGS

By GEO. J. (Jitter) KELLER

Boy, oh Boy, how the days roll by. Seems only yesterday that I worked on this column for the May issue. The news didn't come in so good this month, probably due to new personnel. Don't worry, tho, we'll get bigger and better. Just let us have those newsy items about your doings. Ford Lamb's been galavanting around the country for the past two weeks. Big testimonial dinner at **Pittsburgh** for James Riley Weaver. Have been trying for 15 years to find out what that "R" stood for. Your Editor is leaving on the 18th to get some of those salmon up at Sebago Lake, Maine. Look at the end of this column and I'll let you know how I made out. That's enough of this chatter—let's go.

Well, hello, **Cleveland**—seeing as how you're giving out a warning this month, I'll let you head the list. But, don't forget, show up all the other chapters now or I'll put you last next time. We'll watch that membership list from now on. Seems as tho the Cleveland has some swell entertainers among their engineers. They had a swell meeting in April with a good talk given by Mr. Al Pashek, Technical Assistant Advisor of Socony Vacuum Oil Company.

**Rockford** had a "bang up" meeting on May 11th at the Faust Hotel. Big crowd, good floor show, swell eats and two mighty fine speakers in Ralph A. Powers, Vice President Electronic Control Corp. and A. M. Swigert from Chrysler Corp. Could anyone ask for more? Then to top the evening off 19 exhibitors put on a swell show. You're having some mighty interesting meetings, Rockford, would like to drop in and see you sometime.

**Toledo** Chapter took to the air at their dinner meeting May 2nd. It was held at the Toledo Yacht Club and speakers for the evening were Cy Palmer and R. M. Bates of United Air Lines. They spoke on "Construction, Maintenance, Control" and showed a film "Coast to Coast Flight." The picture depicted the complete operations of a plane in the course of a trip from New York to California. The evening was perfect even to the extra helping of steak. Nothing was mentioned about a June meeting. These men from Toledo vacation rather early.

**St. Louis** held their May 5th meeting at the York Hotel. Speaker for the evening was R. G. Roshongs, Chief Metallurgist, Lindberg Steel Treating Company.

The Dodge main cafeteria was the scene of an interesting meeting for **Detroit** Chapter. W. J. Calkins, Metallurgist, G. E. Platzer and M. Smith, engineers of Amplex Mfg. Company, gave an interesting discussion on Oilitite Oil Cushion Bronze Bearings. A tour of the Dodge trim shop, foundry and sheet

metal plants occupied the attention of the group until nearly 11 P.M. Then the boys were treated to a sound picture, "Fish from Hell." They must be all cooked and ready to serve. Among the 154 who enjoyed the meeting were Bill Smila, Charlie Staples and Don Flater from Chrysler Corporation.

Our baby chapter, **Elmira**, had a swell meeting on May 12th at Hotel Langwell. Their speaker was Mr. Rodgers of General Electric Co. With the aid of numerous slides, he spoke on "Aids for faster and safer machines." Elmira is already planning for 1940. Maybe you can still show up some of these oldsters.

**Syracuse** held a dinner meeting at the Industrial Club on May 3rd. Their speaker of the evening was Mr. R. H. Rodgers of the General Electric Co. His topic was "The Application of the Electric Eye to Tools and Machinery." Syracuse has already made plans for a Clambake September 9th. What—no Chickens, Ray?

The athletes of the **Rochester** clan, gathered for an evening of sports at Rochester's Eagle Hall on April 28th, with bowling the main dish. Chairman Charlie Codd, fresh from the Florida Sunshine, was in good form, but even with this advantage, he did not carry off high score. This honor was a tie affair divided between Jerry Sick and Andy Brasch. They tied at 204. Nineteen prizes were distributed and four and a half barrels of (?) consumed. A really swellelegant party. On May 2nd, the Red Wings settled down to more serious business to hear R. H. Rodgers of General Electric Co. Ford Lamb walked in on this meeting and was sure hot on the subject, "Machines Make Work."

**New York-New Jersey** May 9th meeting was well attended and very interesting. It seems as tho they still are in second place with a total of 239 members and applicants. Ford Lamb was present at this meeting. Plans for the semi-annual meeting in Cleveland October 5-7 were revealed for the first time. Bill Brown, genial general superintendent Wright Aeronautical Corp., heads a new committee sponsoring a free scholarship student for the technical evening school at Paterson. He's also Zone Editor. Can Bill take it. The technical meat of the session was a film presented by the Carborundum Company on the manufacture and applications of abrasives in all types of industry. Boyd Work of the Carborundum Company, Niagara Falls, was the speaker.

**Buffalo-Niagara Frontier** Chapter had one of the most interesting meetings on May 1st at the University Club. Over a hundred members and friends heard A. M. Swigert, Chrysler Corp., talk on

"Superfinish." After shopping around quite a lot, everyone was well pleased with the University Club as a meeting place. The new membership drive has produced 16 new members and 34 prospects. Buffalo is planning a "bang-up" meeting for June 12th. Watch for our report in the July issue.

**Hartford** Chapter's May meeting was held at the City Club. Members and friends heard Mr. Wm. Stauble of the Holo-Krome Corp. give an interesting resume of his ten weeks European trip with interesting sidelights of his eight weeks in Germany. Following the dinner, 200 men listened to Mr. Rodgers of General Electric Company.

**Philadelphia** discussed plans for the summer at their May meeting. A new membership drive was started with Mr. Donovan offering a Stetson hat to the first member bringing in three prospects. Ford Lamb was present at this meeting. Washington, D.C. was well represented by a group led by Mr. Barry. We should have a Chapter in Washington. How about it?

The Philadelphia Chapter held its monthly meeting on Thursday evening, May 11th at the Engineers Club, Chairman John Strecker presiding.

As speaker of the evening Dave Wallace, President of the Chrysler Division, Chrysler Corporation, gave an interesting talk on "Superfinish" complete with samples of the various types of work Chrysler are doing.

Over a hundred members turned out for the dinner at 6:30 and before the meeting opened at 8 P.M. and the tables cleared away several hundred more visitors made standing room at a premium.

The regular business was cut short with announcements of the newly appointed committee chairmen.

We also had as a guest National First Vice-President A. H. d'Arcambal who spoke for a few moments on the plans for the coming year and extended an invitation to visit the Bridgeport Chapter Annual Outing.

It was also announced by Chairman John Strecker that this was to be the last regular meeting until September and that in the meantime the various Committee Chairmen would get together to work on plans to double the Chapter membership and develop the work of the various committees.

Well **Pittsburgh** comes along this month all steamed up about their testimonial dinner. And they have every right to be. Jim is a swell fellow and the best is none too good. Westinghouse was well represented by I. Phillips, E. C. Brandt (where have I heard that name before?) and L. D. Rigdon. So Riggie was there, too. A. H. d'Arcambal gave the history of one James Weaver from the time of the Civil War up until 10 days ago. It seems Eddie Brandt was chief cheer leader. I'll bet they were good(?). Andrew Carnegie was once asked which is most important, Capital, Labor or Management. He re-

(Continued on page 36)



## THE FEWER, THE BETTER

The demand of the times for more production per dollar, without sacrifice in quality, brings into sharper and sharper focus the necessity for the use of the most modern materials. It is natural that the more different steels specified in machine construction, the greater the fabrication and stock room complications.

To reduce these complications, many manufacturers are taking advantage of the versatility of Molybdenum Steels. One, a builder of a varied line of

heavy duty machines, replaced four different alloy steels with Chromium-Molybdenum Steel (SAE 4140) for everything from heavy crank shafts to small screw machine parts.

Overhauling your own material specifications may disclose similar opportunities for highly profitable standardization on a versatile Molybdenum steel. To assist you we will gladly send our technical book "Molybdenum in Steel", free upon request.

PRODUCERS OF MOLYBDENUM BRIOUETTES, FERRO-MOLYBDENUM, AND CALCIUM MOLYBDATE

**Climax Molybdenum Company**  
**500 Fifth Avenue, New York City**

# PRODUCTION PERSPECTIVES

*News of Mass Manufacturing from Everywhere*

An unexpected spurt in automobile sales and a contra-seasonal increase in automobile output furnishes the high spot in the business picture for May, when improved sentiment was said to have been noticed, generally. **Carloadings and steel operations declined but these were offset by improvement in automobile output.** Increase in construction and electrical output. The im-

proved outlook for the automobile industry is based on: Increase in auto output for the week of May 14 to 20 to 80,145 units from 72,375 units in the previous week; a prediction by K. T. Keller, President of the Chrysler Corp., that 1939 production will total 3,800,000 units, about 300,000 units above previous estimates and 40% about the 1938 output of 2,655,000 units; reports

of greatly increased sales throughout the country, indicating a complete recovery from the April slump.

## Mid-west

From Cleveland comes word that the largest monthly volume of automotive parts replacement business in the history of the company was reported by the Thompson Products Inc. for the month of March. The Thompson Company now has a substantial volume of its business in automotive parts replacements, a phase of the industry the company entered into in 1925. The company now employs about 1500 workers in the Cleveland plant.

The B. F. Goodrich Rubber Company plans to erect a \$1,500,000 plant at Clarksville, Tenn. The plant will be a one-story steel structure, 200 by 1000 feet, located on a 40-acre tract of land purchased by Clarksville with a \$60,000 bond issue approved by the voters "for industrial purposes." Operations at the new plant are expected to start within the year.

The National Electrical Manufacturers' Association reported March world sales of household refrigeration units at 251,895 units as compared to 183,059 units a year ago.

Metal plating of plastic materials becomes a new Cleveland industry with the appointment of the Kelly Plating Company, 10316 Madison Avenue, as agents for the Electro-Metallizing Corp. of Buffalo. Copper, nickel, chromium and gold may be plated on plastics, producing a combination that has all the appearance of metal, but is extremely light in weight.

The Carbocoy Company opened its new general offices and factory in Detroit, on June 6. The new plant, costing \$750,000, consolidates all manufacturing facilities formerly located in Cleveland, Detroit and Stamford, Conn., and it is said that this plant will have the largest cemented carbide manufacturing facilities in the United States.

Sutton Tool Company, 2842 West Grand Blvd., Detroit, Michigan, acquired on May 1st the Detroit Die Set Mfg. Company. The latter will be operated as a subsidiary of the Sutton Tool Company and C. M. Sutton is president of both companies, while George Peters is general manager and vice president, P. F. Stokes is Secretary and Walter C. Sutton, treasurer. The newly acquired company will continue to operate under its old name.

Clinton W. Howard, Vice President and Sales Manager of the Rickert-Shafer Company, Erie, Pa., died April 19. Mr. Howard had been associated with his company for many years.

Expansion of the 25-year-old Monarch Aluminum Manufacturing Company, Cleveland, through its Dycast Products Division, is expected to add from 150 to 200 employees within a few months. This new division added some time ago is now equipped to produce zinc and aluminum alloy die castings from high-pressure machines, designed and manufactured by the company. An official

(Continued on page 28)

## STANDARDIZED TAPER ARBORS . . . THEIR SAVINGS AND ADVANTAGES TO MILLING MACHINE OWNERS

BEFORE the adoption of the National Standardized Taper Nose Arbors by milling machine manufacturers, it was necessary for owners to carry a variety of arbors suited to the various makes of milling machines. Arbors were not interchangeable at that time.

Today — K & T Standardized Taper Arbors can be used on all makes of milling machines, utilizing the taper nose arbor. Arbors in a wide range of sizes are immediately available from K & T to meet all normal requirements.

FOR THE BEST MILLING MACHINE  
PERFORMANCE . . .  
USE THE  
BEST ARBORS  
MORE THAN  
**41 years**  
OF DOING  
ONE THING WELL

UNVARYING standards of accuracy are maintained in K & T Arbors by constant testing with the finest of master gauges. There is a difference in arbors and the difference in K & T Arbors is shown in the superior performance of your milling machines. Write for copy of new arbor catalog.  
**KEARNEY & TRECKER CORPORATION**  
MILWAUKEE, WISCONSIN, U.S.A.  
"PROFIT MORE WITH K & T PRODUCTS"



**Milwaukee MILLING MACHINES**

# HOBS Must BE SHARPENED CORRECTLY

## BARBER-COLMAN Hob Sharpening Machines do this job perfectly at Low Cost

The photograph used for the background of this page shows the hob sharpening department of a large tractor plant in which ten Barber-Colman Hob Sharpening Machines maintain accuracy, insure high quality, and cut costs. See reasons outlined below.

Dull hobs will not produce accurate work or fine finish, will reduce production and increase costs. Hobs sharpened incorrectly will produce inaccurate work. Consequently, for maximum effectiveness and economy, hobs must be sharpened correctly. Barber-Colman Hob Sharpening Machines do this job at low cost because they restore the original cutting qualities, accuracy of tooth-spacing, and angle of tooth face, if any. And why not? At least 75% of all the hobs made in the United States are sharpened on Barber-Colman machines before shipment. Economy? One installation of 9 Barber-Colman Hob Sharpening Machines requires only 2 operators, saves 7 men on each of 2 shifts, will pay for itself in about 170 working days. Barber-Colman Hob Sharpening Machines are made in two sizes for straight- and helical-gashed hobs and formed cutters. Investigate. Write today for complete information.

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**B-C**  
COLMAN

PRODUCTS

MILLING CUTTERS,  
HOBS, HOBBLING  
MACHINES, HOB-  
SHARPENING MA-  
CHINES, REAMERS,  
REAMER SHARP-  
ENING MACHINES,  
SPECIAL TOOLS

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General Offices and Plant ROCKFORD, ILLINOIS, U.S.A.

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MILWAUKEE, WISCONSIN  
Dumser & Schroeder  
610 West Michigan St.

## PRODUCTION PERSPECTIVES

(Continued from page 26)

said that these machines will also be available to the trade. Monarch is employing about 1,000 persons.

Jacob D. Cox, Jr., President of the Cleveland Twist Drill Company, and Clifford S. Stilwell, Vice President of the Warner & Swasey Company, were appointed members of the National Association of Manufacturers' Committee on national defense and industrial mobilization, it was announced in early May.

Fire destroyed the Pittsburgh Gray-Iron Foundry Company plant on Pitts-

burgh's North Side the night of May 18, causing damage estimated at more than \$1,000,000.

### East

J. G. Parsons, Superintendent of the New York Central Railroad's locomotive shops at Albany, stated on May 19 that approximately 1,300 of the 1,600 workers laid off on April 20 would be recalled June 5. The shops have been operating with a skeleton force of 250 men, he said.

In Massachusetts 22 concerns which make products going into the manufacture of airplanes, have received orders from United Aircraft. They are

follows: Moore Drop Forging Co., Springfield; Perkins Machine and Gear Co., Springfield; General Electric Co., West Lynn; Boston Gear Works, North Quincy; Meisel Press Manufacturing Co., Boston; Westinghouse Electric and Manufacturing Co., Boston; Simonds Saw and Steel Co., Fitchburg; Wickwire Spencer Co., Worcester; Worcester Pressed Steel Co., Worcester; Stamped Metal Co.; Wyman-Gordon Co., Worcester.

Numerous personnel changes have been reported recently by Greenfield Tap and Die Corp. with the resignation of W. Beltran duMont as director and vice president in charge of sales. Mr. duMont has been succeeded by C. C. Ziegler, who has been Chicago district manager. Edward C. Bailey, former sales promotion manager, has been named eastern district manager, with headquarters at the New York office to succeed the late Charles H. Coe. Elmer C. Bryant, recently manager of the gage department at Greenfield, has been appointed to succeed Ziegler at Chicago. Glen Stimson, former chief engineer at the Detroit plant, has been appointed gage sales manager, with headquarters at Greenfield. Robert M. Smull, for 10 years production manager resigned as of May 1. His successor has not yet been named.

John C. Gorton, 73, mechanical engineer at the Union Twist Drill Company, Athol, died recently. He was born in Providence, R.I., and had been with the Union Twist Drill Company for 25 years.

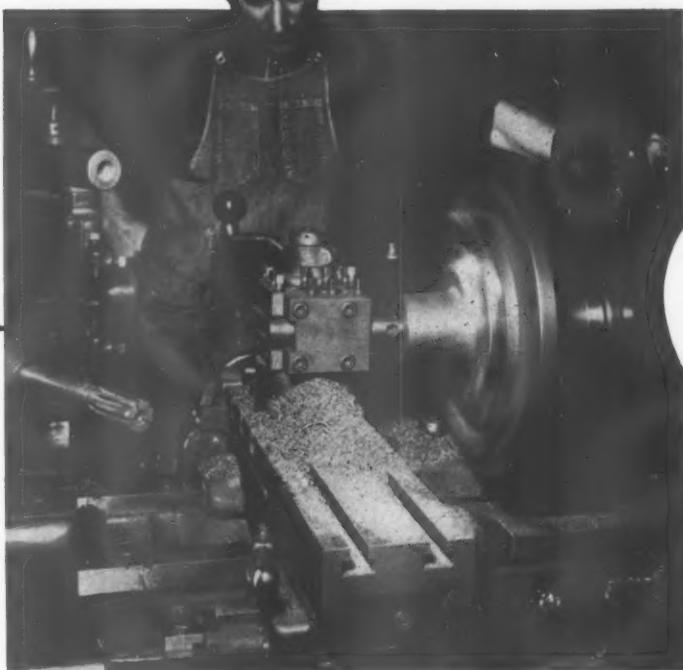
The Boston & Albany Railroad locomotive shops at West Springfield employing approximately 300 men, has shut down for an unannounced period.

William O. Lippman has been named works manager of the East Springfield plant of Westinghouse Electric and Manufacturing Company to succeed L. E. Osborne, who was elevated to manager of the manufacturing and engineering merchandising division. Mr. Osborne selected his successor, one of his last duties before taking over his more responsible position. Mr. Lippman has been with the Westinghouse company since May 18, 1918, and originally located at the East Pittsburgh (Pa.) plant. In July, 1923, he was transferred to the East Springfield plant as chief inspector.

The deep-well pump division of the Worthington Pump and Machinery Corporation is now being transferred from Harrison, N.J. to the Holyoke Works. This addition to the Holyoke plant is part of the expansion program planned for this division, that is going to mean increased activity and employment. It will be several weeks before the transfer of the deep-well pump division unit is completed. William H. Scherer plant manager at Holyoke has been promoted to vice president in charge of manufacturing and transferred to Harrison.

not only "look the part," they ARE capable of handling the tougher jobs. They are designed throughout to have NOT LESS THAN a factor of safety of 8 for use with pressures of 1000 lbs. per square inch. The heads are steel. The tie rods and piston rod are alloy steel. Pistons of greater width provide better alignment. These and additional features of construction of T-J Hydraulic Cylinders are described in catalog No. H-37. This also contains engineering information to assist you in making the proper selection.

TOMKINS  
JOHNSON  
624 North  
Mechanic St.,  
JACKSON,  
MICH.  
Agents in  
Principal  
Cities.



They were never able to do  
this job and hold the limits  
until a new J&L Universal  
Turret Lathe was  
installed

## NOW This Manufacturer Machines This Part to Limits of .0003" on the Taper

J&L UNIVERSAL TURRET LATHES provide the answer to the problem of stepping up accuracy and maintaining a high rate of production.

The part machined on the #3 J&L Universal Turret Lathe, shown above, (one of three in this shop) is a cast iron hub for a meat chopper. Limits on taper are held to plus or minus .0003". Production is 15 pieces per hour. The out-of-balance nature of this part, run at high speeds for carbide tools, does not influence the accuracy — and PROVES the rigidity of J&L Universal Turret Lathes.

There's always a "first time" for handling work better and cheaper. Why not call in J&L engineers to help you find the way to more profitable production?



**JONES & LAMSON MACHINE COMPANY — Springfield, Vermont, U.S.A.**

# NEW Equipment

## High Speed Hammer-Precision Drilling Machine

High Speed Hammer Co., Inc., Rochester, N.Y., have made a two- and three-speed Model R-53 Precision Drilling Machine for many years but now introduce a four-speed machine with speeds of 750, 1500, 3000 and 6000 r.p.m.

The range of this drilling machine is from No. 80 to  $\frac{1}{4}$  inch drill. Holes .010"

diameter have been successfully drilled with it. Because of an increasing demand for a sensitive drilling machine with the proper speed for tool steels, stainless and other tough alloy steels the spindle speed of 750 r.p.m. was added to the new machine. This speed is also useful in certain drilling operations in slate and other non-metallic materials.

### Reed-Prentice-Duplicator Attachment

Reed-Prentice Corporation, Worcester, Mass., introduced recently their combination hydraulic and electric control duplicator attachment which they developed for use on vertical milling machines for die work and toolroom engine lathes for face and circular form

turning. The same attachment, it is said, can also be applied to horizontal boring mills for die work-planers and shapers for form planing and shaping of molds and dies. The attachment can be applied to the standard machines and changed from one machine to another very quickly. In addition it allows the use of a standard machine. The attachment can also be furnished for three-dimension milling by having a small hydraulic motor connected to the longitudinal, cross and vertical feeds using one pump and electric control unit for the three movements.

### Precision Master Collet

New Britain-Gridley Machine Division of The New Britain Machine Company is now offering to the trade a precision master collet.

These Masters, according to the producers are made of a special collet spring steel to give the proper spring tension required in gripping and to prevent "setting" are accurately ground inside and outside. The extremely hard pads are ground inside and outside and locate against an undercut shoulder assuring accuracy. Two screws located in the front end not only hold each pad in position but are designed to slide the pad firmly into its seat, preventing any possibility of end-chuck and loosening. These screws are readily accessible, thus pads can be removed from the master in a machine without disturbing its adjustment in any way. Time tests have proven that the pads for a single collet can be completely changed in five minutes.

A patented round felt plug is placed in each split of the collet to prevent coolant oil and chips from washing back to the collet seat. This condition is further improved by the addition of neoprene pants which are oil resisting and which are placed around the main body of the collets. Chips which are scuffed from the bars are prevented by these pants from collecting in the collet seats and interfering with accurate location.

One set of Master Collets will accommodate pads from the smallest size up to the maximum capacity of the machine.

Master Collets of the New Britain-Gridley type are now available in all sizes. All components are either patented or have patents pending.

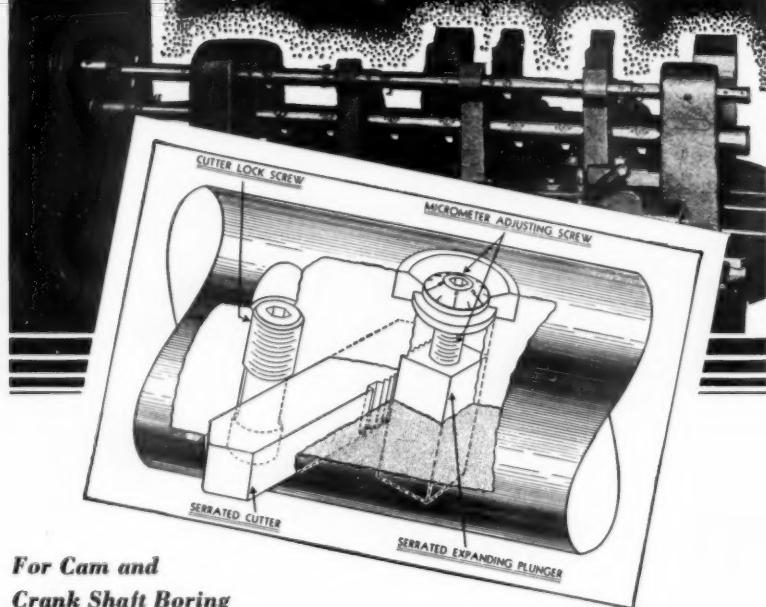
### New Rotary Files

The Grobet File Corp. of America, 3 Park Place, New York City, has recently introduced a complete line of Rotary Files ground from the solid, made of super high speed steel.

These files are ground from the solid after hardening. The manufacturers point out that these files can be resharpened many times at low cost.

This company also makes a complete  
(Continued on page 50)

## Results...from this DAVIS Super Boring Tool



For Cam and Crank Shaft Boring

**ACCURACY:** Tool is precision built, assuring extremely accurate results.

**INTERCHANGEABILITY:** Uniformity of design and structure allow a rapid and accurate change of set-up.

**RUGGED CONSTRUCTION:** Permits with safety, increased speeds and feeds.

**ECONOMICAL:** Tools are universal in application, one tool covering a wide range of bores. Furnished in sizes for boring diameters  $1\frac{1}{8}$ " and larger. Extremely effective with T.C. tipped cutters.

**MICROMETER ADJUSTMENT:** Minute adjustment permits as fine as .0002" adjustment on diameter.

Send us prints of your work for a special recommendation

**DAVIS BORING TOOL DIVISION**  
Larkin Packer Company, Inc., St. Louis, U.S.A.

# DAVIS BORING TOOLS



*Would  
A 60% SAVING  
APPEAL  
TO YOU?*

YOU may be surprised to learn what you can do to reduce your machining costs with these new Gisholts. Due to their ease of operation, faster cutting speeds and the rigidity to permit multiple cuts with accuracy, savings of 60% and over are not uncommon.

Formerly, it took 48 minutes each to machine these beveled gears which are made up in lots of 100 to 200. Now, with a Gisholt 2L High Production Turret Lathe, it takes only 19 minutes each. Add up savings like this over a year's time—on a group of miscellaneous parts—and you'll have a worthwhile saving in your production costs. Any Gisholt field engineer can explain what these new improvements mean in terms of your own work.

★ This machine is equipped with fixed center hexagon turret and standard tools including piloted boring bars, reamers, multiple turning head with overhead pilot and tool holders—all made by Gisholt. The rigid bed and headstock, with the added support of overhead pilot, permit multiple cuts, still holding the close limits required for these gears.

Literature covering Gisholt Turret Lathes is available on request.



**GISHOLT**  
MACHINE COMPANY

1229 EAST WASHINGTON AVENUE, MADISON, WISCONSIN, U. S. A.  
TURRET LATHES • AUTOMATIC LATHES • TOOL GRINDERS • BALANCING MACHINES

*Handy  
Andy  
Says —*



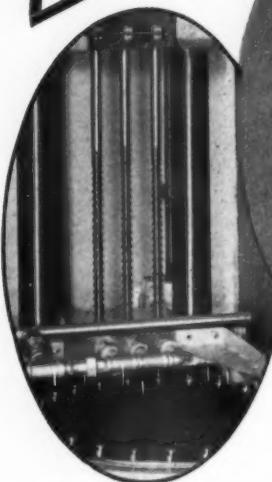
As some of you boys know, I have been building a home, nothing unusual considering that the home is the individual empire of most constructive people. But, the building of my home has had its comic as exasperating phases and, comparing notes with friends who have also built, we find that our projects have run somewhat

parallel courses. Unlike the rest, who engaged architects, I drew my own plans, knowing the family requirements and my personal wants, which boiled down to a padded cell (den) for use when writing. I wanted quiet (occasionally), the wife wanted—well, you know what a wife wants—and the kids wanted fun and a room to have it, so all I had to do was to reconcile the various needs and build to suit. So, we have five rooms down, a den upstairs and a recreation room with fireplace in the basement, all accessible from a common hall. The wife can entertain the Ladies Aid, I can write, the kids can have a funfest and the maid can entertain the cop in the kitchen, all without interference. It's okay.

After submitting plans to various builders, I gave the job to a Jewish contractor, not because he was low bidder (he wasn't) but because he had a good reputation and was highly recommended by a personal friend. Except for a Joosh plumber and electrician, the various sub-contractors were gentle. I had another reason for choosing a Jew; with all the racial propaganda rampant, I wanted to satisfy myself, by personal experience, how much warrant there is for anti-Semitism. I submitted the plans, explained unusual features, signed a rather sketchy contract and told him to go ahead. I wanted a man's word rather than his bond, took a chance on my home to settle a question of racial integrity.

## Which is Your Problem?

A FEW  
HUNDRED  
OR  
HUNDREDS  
OF  
THOUSANDS



Above: Low Production broaching of model engine cylinders on low-cost Colonial Light Duty Press.

Two jobs—both requiring accurate and smooth finishing of round straight bores. A few hundred at a time in one case. Steady production at 1400 per hour in the other. In the first case, broaching proved to be the most economical method of obtaining the high accuracies required. In the other, it not only reduced costs, but licked fatigue failure of those highly stressed parts by

eliminating circular tool marks—formerly the starting points of hardening cracks.

Regardless of quantity, there is a Colonial Machine for every broaching job. But, what is more, the experience of Colonial engineers with production jobs of every kind, guarantees machine selection and tool and fixture design to give YOU the most economical job for the highest accuracy.

We will be glad to send you complete data on Colonial Broaching Machines and place you on our mailing list to receive regularly "Broaching News", containing descriptions of new developments in the practical use of broaching equipment.

**COLONIAL BROACH COMPANY, 147 Jos Campau, DETROIT, MICH.**

There were mistakes, of course, exasperating to one used to precision but nothing serious; building craftsmen, it seems, use plans only to get a building permit, then, a superficial glance sufficing, go to work. Checking up after working hours, I would call the builder, explain errors, found them corrected by the next evening but with something else to worry about. Not workmanship, nor material, but the plans; had a heck of a time convincing them that the house was to be built my way, not theirs. The plumber gave me the most grief, installing everything quite the reverse of what I wanted, finally decided that mine was the stronger will and gave me what I wanted, but with covert predictions regarding the ultimate destination of a certain Tool Engineer. Oddly enough, each of my friends had the same trouble with their plumbers; they just won't look at a drawing.

Oh yes, the basement block layers were Jewish too, cheerfully tore down a whole wall and rebuilt it when I criticised the interlocking, but refused to leave openings for the furnace ducts. "Der carpenterrrr vill do that," they explained, although I'm hanged if he did; everybody chopped holes everywhere and plugged 'em up again, despite that every opening had been plainly marked. No coordination whatever. The gas men dug trenches and bored holes, filled 'em up, the plumber ditto, when they could have pooled their resources and saved time and money. Why say, if we were to work with as little foresight we'd be digging holes too instead of—well, sometimes wishing we were, as during the seasonal madness.

There was grief enough during construction, but in retrospect the experience is pleasant and educational, even though I have designed some scores of homes, apartments and industrial buildings in my time; now, however, conditions are quite different. Yet, human nature remains the same; each of the contractors fought for his ideas, surrendered gracefully when, by free-  
(Continued on page 34)

# "THIS ONE EVERY TIME!"...



## AN ACTUAL QUOTATION BUT "OFF THE RECORD"

A N editor of a leading trade paper wrote us on April 4 . . . "While I was visiting a large tool and die shop, I asked the operators how they liked their jobs and the machines on which they worked. When I came to four new lathes of different makes, installed about a year ago, I asked a tool maker . . ."

*Question:* "If the boss has no preference, on which one of these four lathes would you set up your job?"

*Answer:* (Stepping over and affectionately putting his hand on the Monarch lathe) "This one—every time!"

*Operator's Comments:* "Monarch has everything it takes—no matter how you look at it."

*The Boss Must Have Agreed* with the tool maker's conclusions, and decided that he could make more money with Monarch. Because, since this conversation took place, several additional Monarch Model "C" tool room lathes have been ordered for this plant—to help make *more* things for *more* people at far less cost.

## MONARCH LATHES cover the turning field and include:

MONARCH LATHES  
*MONARCH* LATHES  
MONARCH KELLER LATHES  
5-T MANUFACTURING LATHES  
10" SENSITIVE PRECISION LATHES  
MODEL "C" TOOL ROOM LATHES

*Write for Catalogs.*

THE MONARCH MACHINE TOOL CO., Sidney, Ohio, U.S.A.

**MONARCH LATHES**  
*COVERS THE TURNING FIELD*

Chicago Sales Office: 622 West Washington Blvd. • Indianapolis Sales Office: 3115 North Meridian St. • Newark Sales Office: 1060 Broad St. • Pittsburgh Sales Office: 604 Chamber of Commerce Bldg. • Agencies in principal industrial centers of this and foreign countries

# Make More Money with Monarchs!

Mention "The Tool Engineer" to advertisers

THE TOOL ENGINEER FOR JUNE, 1939

33

## HANDY ANDY SAYS

(Continued from page 32)

hand sketches and verbal portrayal, the desired effect finally clicked. There were mistakes, yes, but they were honest mistakes and pride of workmanship ruled. The heating contractor, for instance, was dubious of my schemes, later copied them, did a swell job. The cement man was a real artist, the mason a prince of a fellow and we're all good friends. I'll be moving in about the time you boys read this.



Regarding the Jews, I'll repeat a story I may have told before. Three Joosh gentlemen boarded a train, prom-

ised the colored porter a nice tip if he'd take good care of them. George did. Their destination reached, he gave the first one a fine brushing, when Mr. Isaac thanked him profusely, walked off. The next one got a less thorough polishing; he too, thanked George and walked off. The last one got a whisk or two, apathetically; he too, walked off with thanks, then, after a few paces, came back and handed the wilting darky a fifty dollar bill. "That's for being good to us." Later, rolling the ivories with his fellow knights-of-the-whiskbroom, George remarked: "Yo' know, Ah thinks we got them Joosh gummens all wrong. Ah doan think they crucified de Lawd at all. They just

worried him to death." It was like that with my builder; he kept me on edge until the last minute, then generously came across with more than I had expected.



In writing this, I am fully aware of existing racial prejudices, concede, as a matter of fact, that it is not entirely without foundation, yet, were each of us to be judged by his darker side what a terrible picture we'd make. Into this Society of ours come men of various creeds and races, each contributing something of his personality or genius, all committed to a general scheme of progress that must necessarily level all barriers of caste. I cannot, personally, hope to level inherent prejudices, do not even claim that I am free of them myself, or that, in moments of exasperation, I count to a hundred before letting go. But, I write, am aware of the force of the printed word in shaping public opinion and would direct that force toward construction. When the time comes to lay down the tools of my vocation and write finis to the book of life, let it be said of me that I mastered my prejudices and, while attacking abuses and evil conditions, wrote no evil of any man. Be with me in that.



## ETERNAL VIGILANCE IS THE PRICE OF SAFETY

One of the most famous and successful generals in the world used that phrase as his constant command to the men of his armies in the field.

"Eternal vigilance is the price of accuracy" might well be used to characterize the manufacture of Danly Dowel Pins.



Danly Dowel Pins are hardened and ground to a tolerance of plus or minus  $1/10,000$  of an inch, by a special process developed by this company, and since applied to the precision production of ground parts by many of the country's leading manufacturers in other lines.

Made in 2 sizes—.0002" and .001" oversize—every Danly Pin will be found absolutely accurate to its tolerances—from end to end. Stocked in all Danly branches.



DANLY MACHINE SPECIALTIES, Inc., 2112 So. 52nd Ave., Chicago, Ill.

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**DANLY** DIE SETS and DIE  
MAKERS' SUPPLIES

Their Dependable Quality Means Lower Cost Stampings

(Continued on page 49)

## TOOL HARDENING

(Continued from page 13)

From the foregoing discussion it is apparent why many small manufacturers are giving serious consideration to doing their own tool hardening in small atmospheric gas-fired furnaces.

An additional feature which has been applied in many cases is the use of one automatic controller to operate two furnaces: that is, an oven furnace and a pot furnace. The wiring diagram

# ANNOUNCING



## THE NEW FACTORY AND GENERAL OFFICES OF CARBOLOY COMPANY, INC.

We announce the opening of our new factory and general offices at Detroit, Michigan, combining all research, manufacturing and general administrative units formerly located at Cleveland, Detroit, and Stamford, Connecticut.



These new facilities represent an investment made to meet certain requirements that we feel are vital to the sound growth of this industry. They provide for the development of a progressively higher order of economy—and initiate a program that should result in a more comprehensive use of cemented carbides throughout industry.

This new plant, embodying existing facilities for producing approximately 10 times the present amount of cemented carbide currently consumed by industry, with ample reserve space, is not only the *largest source of cemented carbide in this country*, it is a promise of far greater benefits to industry in the future than have been possible in the past.

## CARBOLOY COMPANY, INC. DETROIT, MICHIGAN

CHICAGO • CLEVELAND • PITTSBURGH • NEWARK • PHILADELPHIA • WORCESTER, MASS.

(A complete descriptive brochure available for executives on request.)

## CHAPTER DOINGS

(Continued from page 24)

plied, "Which is the most important leg on a three legged stool?" With reference to the A.S.T.E. if all legs are important to a three-legged stool then you know how we all feel about Jim and Ford. We sure need them both.

The Bridgeport Chapter held their monthly meeting on Thursday, May 11th at the Stanley Works Club Room. The speaker of the evening was Robert L. Baldwin, Chief Metallurgist of the Stanley Works of Bridgeport, who gave a very fine talk on Steel. Following his talk, moving pictures of "Making and Rolling of Steel," taken at the plant were shown. Samples of work done at

this plant were on exhibition, about 80 members and guests were present . . . Sid Curry came up from Norwalk—and Ernie Reaney down from Shelton . . . come again fellows. . . . After the meeting the entire group was taken through the plant and viewed a furnace in operation which was very interesting . . . Would like more of these visits. Glad to see Ed Andres and Chas. Oviatt attending meetings again, also quite a few fathers with their sons. . . . Future ASTERS. Chairman Ben Page named Frank Whelan to the Editorial Staff. . . . "Hurray for teacher."

The May meeting of Twin Cities Chapter was attended by 105 members and guests. That our membership drive

is becoming effective is attested by the announcement of Chairman Wise of six new applications. We hope many more will follow.

Following the dinner a lecture on "Superfinish" was given in one of the University auditoriums by Mr. M. W. Price of the Chrysler Corp.

Approximately 425 members and guests from the Engineers' Club of Minneapolis and the professors of mechanical engineering of the University of Minnesota were present at the lecture . . . Quite a turn-out.

The highlight of the evening was the telling of a story by Mr. Petrie. When he approached the climax he looked up and saw a woman in the audience . . . we hope it was a good story.

Another amusing episode occurred when Mr. Wise and Mr. Pennington, after assisting Mr. Petrie pack his exhibits, were unable to get out of the building.

Tri-City members held their regular monthly dinner meeting at the Fort Armstrong Hotel, May the 10th. There were ninety (honestly counted) fellows out for dinner, and many more came in later to hear W. G. Robbins, president of the Carboly Company, talk on "Cemented Carbides at Home and Abroad." A lot of interest is being shown in the manufacturer's exhibits on display at our last three meetings.

The May meeting of the Milwaukee Chapter wound up this season's technical sessions with a talk on "Tapping Problems and Shop Kinks," by Mr. Goldberg of the R. G. Haskins Company. A vivid demonstration of Mr. Goldberg's theories was performed on tapping equipment especially erected for the occasion.

K. J. Papke, the fellow that handled this chapter's transportation facilities to the '39 Tool Progress Exhibition, is back on the van again handling transportation for a plant visitation thru the Moline Arsenal on June 1st. Same Papke was the donor of the door prize won by "Lucky" Andy Anderson.

Foster Kocler, chairman of the Meetings Committee, has recently been released from hospitalization. (We're looking forward to seeing you at the Mid-Season "Schlacht," Foster.)

The organization meeting of Worcester Chapter No. 25 of the American Society of Tool Engineers was held in the Aurora Hotel, Worcester, Mass., Friday, May 5, 1939 at 8:15 P.M.

Mr. Cole of the Norton Company introduced Mr. Lippard as temporary chairman who in turn introduced Mr. Ford R. Lamb, Executive Secretary of the National Society. Mr. Lamb outlined the objects and aims of the society with a brief outline of its history from its inception in Detroit in 1932 to the present time.

After Mr. Lamb's talk the Engineers present voted to proceed to organize. At this point C. A. Banks was appointed temporary secretary. Several visitors requested application blanks which

(Continued on Page 38)



## IS DEEP DRAWING OF STAINLESS STEEL A PROBLEM WITH YOU?

IF SO, WIRE OR WRITE AT ONCE FOR  
FREE WORKING SAMPLE OF

## Stuart's "SUPER-KOOL" EXTRA HEAVY DUTY DRAWING COMPOUND

A thoroughly tested deep drawing lubricant widely recommended by leading makers of stainless steel, and in daily use by well known production plants.

Stuart's "SUPER-KOOL" sprayed or brushed on the stock prevents metallic seizure and allows proper slippage when angles are sharp and where pressures are extremely high. Containing no pigment its cleanliness is an interesting factor to many plants.

Address request for free sample to General Offices, 2727-2753 South Troy Street, Chicago

D. A. STUART OIL CO. LTD.  
ESTABLISHED 1865  
CHICAGO - - - - U. S. A.  
*Warehouses in Principal Industrial Centers*

# POTTER & JOHNSTON IN AIRCRAFT MANUFACTURE

## Greater Production With Less Fatigue Divided Labor Costs Extreme Accuracy.

When confronted with problems involved in the manufacture of AIRPLANE ENGINES and PROPELLERS make use of the knowledge of the subject possessed by P. & J. engineers. More often than not these problems include a combination of alloy steels—large amounts of stock to remove—many involved operations on one piece—high hardness readings—unusually close limits of accuracy—extremely fine finish requirements—all of which call for not only a versatile and economical machine tool but also considerable cooperation between the manufacturer and the machine tool builder. P. & J. Automatics have proven outstanding for solving the problems for this class of work. They are especially designed for high production, with extremely flexible tooling facilities.

The Aircraft Industry offers much evidence of cooperation between the manufacturer and the P. & J. engineering department in the matter of tooling, etc., which is discernible in the photographs on this page. They have been selected from our Pratt & Whitney Aircraft and Hamilton Standard Propeller files.

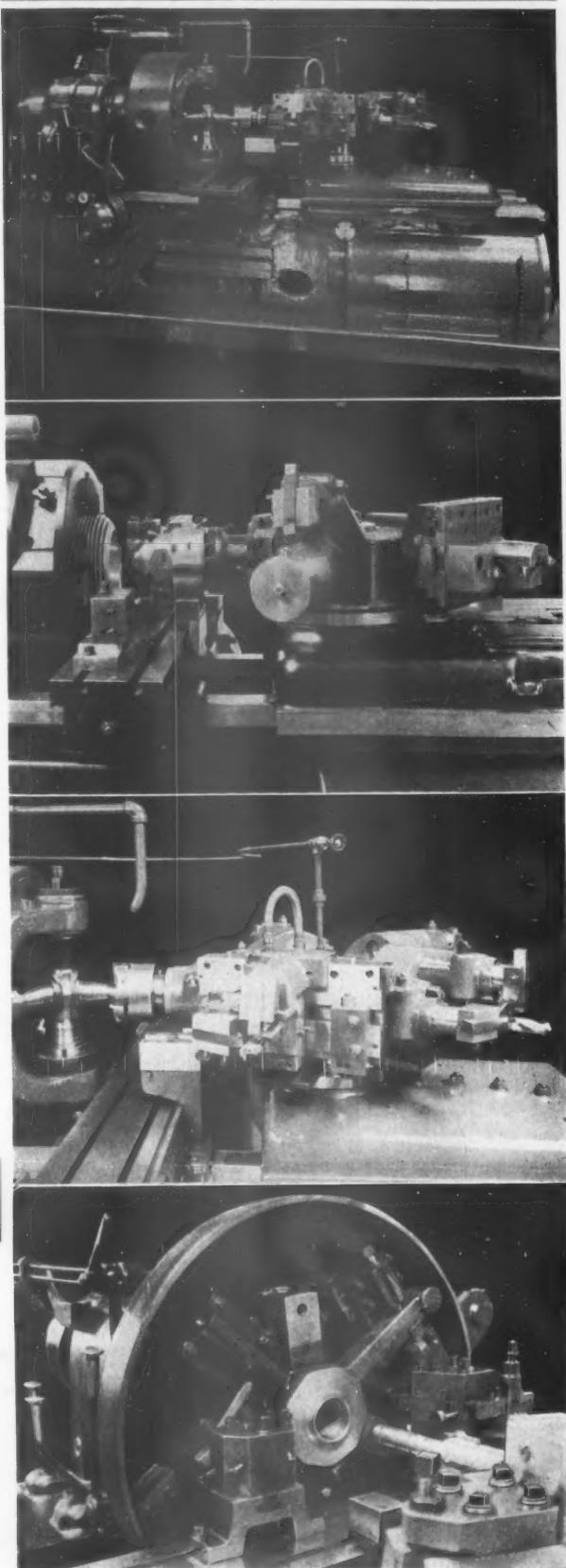
Send us your prints for full information.

### POTTER & JOHNSTON MACHINE CO.

Pawtucket, R. I., U. S. A.

#### FACTORY REPRESENTATIVES:

William L. Martin, Headquarters at Factory; New England States and Eastern New York & New Jersey; A. W. Stone, 986 Kenyon Ave., Plainfield, N.J.; Western New York & New Jersey, Eastern Pennsylvania, Maryland and Delaware; G. Tell DuBois, 8-154 General Motors Building, Detroit, Michigan; Michigan and the City of Toledo, Ohio; Louis K. Voelk, 14014 Woodworth Road, East Cleveland, Ohio; Ohio—with the exception of Toledo, and Western Pennsylvania; Harry I. Schuster, 743 North Fourth Street, Milwaukee, Wisconsin; Illinois, Missouri, Wisconsin, Iowa and Indiana. **AGENCIES:** Star Machinery Company, 1741 First Street, South, Seattle, Washington; Hemes-Morgan Machinery Co., 2026 Santa Fe Ave., Los Angeles, Calif.; Jenison Machinery Co., 20th & Tennessee Sts., San Francisco; Wessendorff, Nelms & Co., Inc., 320 Franklin Avenue, Houston, Texas; Arthur Jackson Machine Tool Co., 60 Front Street West, Toronto 2, Ontario, Canada; Arthur Jackson Machine Tool Co., 437 Grosvenor Ave., Montreal, Canada; Burton, Griffiths & Co., Ltd., Birmingham, England; R. S. Stokvis et Fils, Paris, France; Rotterdam, Holland; and Brussels, Belgium; Maskinaktiebolaget Karlebo, Stockholm 1, Sweden; Ing. Ercole Vaghi, Milano, Italy; Yamatake & Co., Ltd., Tokyo, Japan (Imperial Export Co., 44 Whitehall St., New York, N.Y.); Almaco, Zurich, Switzerland; Be-Te-Ha, Warsaw, Poland; Schuchardt et Schutte, Budapest, Hungary; Bourla Freres, Istanbul, Turkey.



## CHAPTER DOINGS

(Continued from page 36)

were filled out making the total number of applications with initiation fees paid at this meeting sixty-seven.

The meeting then proceeded to the election of officers and S. J. Soderback and Henry Wilder were appointed tellers.

The officers elected are Mr. E. M. Taylor, Chairman; Mr. R. A. Cole, Vice Chairman; Mr. C. A. Banks, Secretary; Mr. Carl Lindegren, Treasurer.

Following the election the newly elected officers were given the oath of office by Mr. R. M. Lippard with the

exception of the Chairman, Mr. E. M. Taylor, who was absent.

The Vice Chairman then took over the chairmanship of the meeting and was presented with the Charter, Constitution and book of instructions, etc., by Mr. Lamb who also presented the Secretary and Treasurer with the implements of their respective offices.

Names of those who had applied for membership and had become charter members of this chapter were read and requested to rise as their names were read.

Welcome to the fold, Worcester. We are all glad to have you with us.

The regular monthly meeting of

Cincinnati Chapter was held at the Ohio Mechanics Institute on May 2nd with about 75 members and friends present. Mr. J. H. Myers, Sales Manager of the Lodge & Shipley Machine Tool Co. gave a talk on the history and development of the modern lathe. At the conclusion of Mr. Myers' talk, a discussion among the entire group took place regarding developments of machine tools in Europe compared to developments in the United States.

At the end of the meeting, before refreshments, it was announced that the second educational meeting would be held on May 16th at the Lodge & Shipley Co. Dr. Kronenberg would continue his discussion of cutting with single point tools.

## Keeps Tool Design Simple and Practical when operations are combined to cut costs



A SUBSTANTIAL cut, 35 PER CENT, in machining costs was secured with the five-operation JACK-LOCK Tool shown above, engineered by McCrosky for finishing an oil-meter body. It cuts costs by saving time and by insuring concentricity. . . . The compact JACK-LOCK Wedge leaves ample room for all the blades needed for the combined operations and permits strong body sections and abundant chip clearance. . . . Also incorporated in this tool are individual adjusting screws behind the blades and TRU-GROUND Serrations in the blades, as illustrated below.

Let McCrosky engineers recommend the special-purpose JACK-LOCK Tool that can cut your costs. For your reference file send for JACK-LOCK Bulletin 15-F.

MCCROSKEY TOOL CORPORATION, 1340-70 Main St., MEADVILLE, PA.

## CARBOLOY'S NEW PLANT

(Continued from page 17)

used for sanitary purposes, into a special settling tank. This water is then pumped into a cooling tower and recirculated for use in the air-conditioning system, cleaning, and for general manufacturing purposes.

### Employee Conveniences

Numerous conveniences for employees have been installed throughout the factory and general offices. These include cooled drinking fountains, large, well lighted and well equipped wash rooms, inside and outside recreational facilities and an employees' restaurant, the latter operated on a unique plan that is a happy medium between a company operated restaurant and a concession.

All features considered, throughout general offices and factory, these new facilities of Carboloy Company, Inc., leave the impression of a carefully planned step in a long range program providing not only for present requirements but also anticipated needs for many years to come.

### "SO ON WITH THE A.S.T.E."

(Continued from page 20)

It is also planned to start a course in public speaking sponsored by our Chapter, if enough interest can be aroused among our members.

We are awaiting a copy of the National Standards Committee report, which we hope will be a guide to us in formulating plans for increased activity of our local committee.

We are also improving the publicizing of our meeting announcements to increase our attendance at these affairs.

E. W. Ernest  
Chairman, Schenectady Chapter

The St. Louis Chapter will do the following for the coming year: Increase our membership to 150 members. Hold our Second Annual Outing either in July or August. Will not have any technical meetings in July or August. Will make a plant tour in September. Conduct a series of meetings starting in October having exhibits at each meeting. These exhibits to be of not more

(Continued on page 42)

# THIS FILE-SIZE, SIX-PAGE DATA SHEET SHOULD BE A PART OF YOUR RECORDS

*It contains complete information  
on our improved dual adjustable  
inserted-blade milling cutters*

This circular explains how, in these improved cutters, both radial and axial adjustments are obtained without the use of pins, wedges or set screws. This affords much more usable blade, which not only promotes economy, but also facilitates regrinding and helps speed up production.

The circular shows, by detailed drawings and text, just how serrated blades, tapered toward the bottom, fit into mating slots in the cutter body, where they are held in an immovable grip; and how the angle of the slots to the body makes the new DUAL ADJUSTMENT possible. No charge for the circular.

THE OK TOOL COMPANY, SHELTON, CONN., U.S.A.



TRADE  
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MARK

INSERTED-BLADE METAL CUTTING  
**TOOL SYSTEM**

## SWARTZ TOOL PRODUCTS Co. Inc.



- DESIGNERS -  
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EQUIPPED TO HANDLE  
ANY OF YOUR TOOLING  
REQUIREMENTS

A larger special fixture—four parts are clamped with one lever motion and machined from both sides by the two-way heads.

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Milwaukee—Geo. M. Wolff, Inc.  
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& Tool Service Co., Inc.

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Chicago—Ernie Johnson  
Canada—Hi-Speed Tools, Ltd., Galt, Ont.  
St. Louis—Mill Supply & Mach. Co.

Oneida, N. Y.—W. F. Himmelsbach  
Pittsburgh—J. W. Mull, Jr.  
Toledo—J. W. Mull, Jr.  
Philadelphia, Pa.—Morgan Tool  
& Equipment Co.

## HOW CAN A \$1.50 WATCH COST \$1,040 IF MADE UNDER OLD-FASHIONED WAYS?

By John M. Younger

Chairman A.S.T.E. Fact-Finding Committee

There have been a few inquiries and comments on the fact that a \$1.50 watch should cost \$1,040 if made with old-fashioned equipment. So possibly the answer might be of value to the readers of "The Tool Engineer."

Watches have been with us these many years and in the old days they were very expensive. Today, however, we can buy a reliable watch for as little

as \$1.50. Yet it is surprising to know that this watch would sell for \$1,040 if made with old-fashioned tools.

Mr. James R. Sheldon, President of the Ingersoll-Waterbury Company, makes this statement which throws light on the subject:

"I have carefully gone over the operations which would be necessary in making one watch by 'old machine shop methods.'

"The equipment which I assumed to correspond to the above outlined method would consist of an engine lathe, bench lathe, a shaper, a milling machine, a drill press, a vise, and the usual equipment of hand tools ordinary

ly used on a toolmaker's bench.

"It would be necessary to make quite a considerable amount of special equipment before a single watch could be produced. I have therefore figured in on this proposition the number of hours which I estimated would be required to produce such special equipment.

"I have not included in this estimate any figure for plating a case, as I can see no way in which this could be done with anything construed as 'old machine shop' equipment. Any man capable of doing this class of work at all would probably command wages of \$1.00 per hour. Furthermore, an overhead cost of 80 to 100 per cent would ordinarily be figured on direct labor in a manufacturing plant.

"The cost would be as follows:

Equipment .....	\$244.00
Direct labor .....	411.00
Overhead (90% of direct labor).....	369.00
Material (including special equipment) .....	16.00

Total ..... \$1,040.00

"This is calculated on making one watch and charging up the necessary special equipment without which this watch could not be produced. For additional watches the equipment item of \$244.00 would be eliminated. The material for additional watches would be only a few cents per watch, as a greater part of the material bill is for special equipment."

## WHY BUY MACHINE TOOLS?

(Continued from page 11)

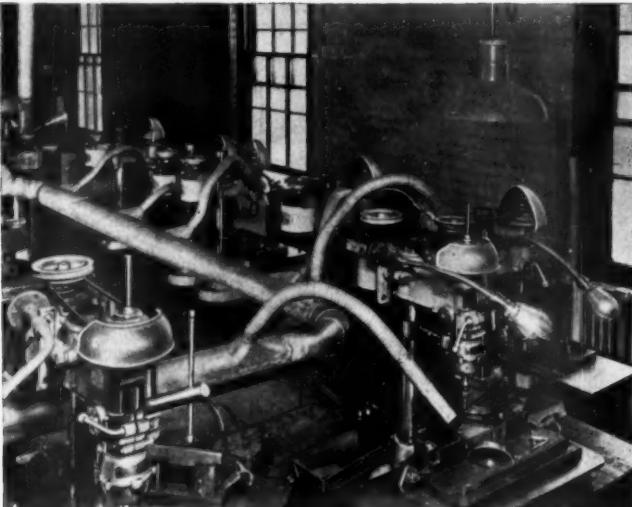
instead of forty-eight. With the same equipment, a workman cannot produce as much work in forty hours as he did previously in forty-eight; therefore, there is less production per employee. Also, during this same time, wages have been increased. This time, it might be the correcting of these scrambled basic conditions that establish our standard of living.

## REDUCING THE DEMAND FOR SKILLED LABOR

The machine tool and the tool engineer have been gradually transferring the skill of the mechanic from the man to the machine. In many operations today requiring the highest accuracy, unskilled or semi-skilled labor with adequate equipment has been able to meet the demand. For this reason, during the last ten years, there has been a certain amount of curtailment in the training of skilled help. As business improves and activities increase in the shops, there will again be a shortage of skilled help. New machine tools and manufacturing equipment will have to develop to reduce the need for high skill.

Such trends are definitely here, and will continue to grow. Progressive industries have recognized them and taken steps to meet the demands.

# How To Cut YOUR EQUIPMENT COSTS



Do you want to speed up production and reduce costs—without investing many thousands of dollars for new machinery? Here's a practical suggestion: There are many operations in your shop that can be handled more efficiently and economically by low-cost tools—by Delta drill presses that cost from \$26 to \$275, Grinders, from \$46 to \$84, Metal-Cutting Band Saws at \$79.50. Thousands of America's leading industrial concerns, including the largest, are using Delta low-cost tools

to cut their equipment costs. Huge automotive factories, aviation and motor plants, small part makers, plastic plants—every conceivable type of manufacturing plant is found on the list of Delta low-cost tool users. If these concerns can use low-cost tools to advantage—so can you!

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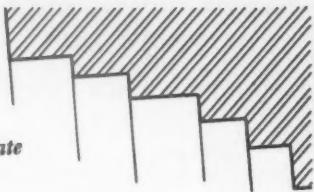
giving list of users, detailed descriptions of the complete Delta line and prices—and full information on how you can try any Delta tool in your shop without cost or obligation.





*Each blade individually sharpened  
—no costly undercuts!*

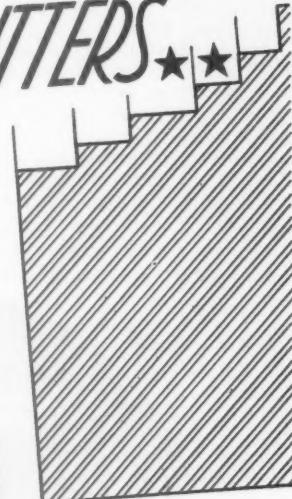
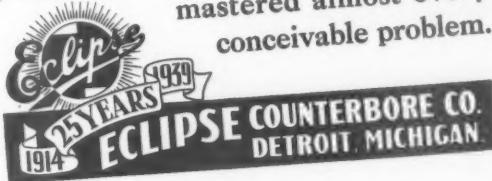
*Each blade designed with adequate  
chip clearance!*



# Eclipse MULTI-DIAMETER CUTTERS ★★

*Radial Drive is ruggedly built to withstand the extra heavy load developed in multi-cutting!*

★★ represent, literally, millions of hours of experience. Eclipse engineers know the ropes . . . In producing multi-diameter cutters over many years, they have encountered and mastered almost every conceivable problem.



## HOW ABOUT THE FUTURE?



Type No. 4000 Q-C JIG Clamps Up.  
Many Other Types and  
711 Sizes Available.

If you design and build a Jig or Fixture for any part,  
will it be obsolete a year from now?

NOT if you use "Q-C STANDARDIZED UNITS"

When other types are discarded, Q-C JIGS will still be producing for years to come. Never OBSOLETE and may be retooled at small expense over and over again. Then, too, you can tool a Q-C Fixture for several different parts, changeovers only a moment's time.

Send us part prints for suggestions and quotations.

We render a complete service; Designing and/or Building Dies, Jigs, Fixtures, Multiple Spindle drill heads, Index Tables, Etc.

Infallible Deliveries.

Complete Engineering Data sent upon request.

## Q-C ENGINEERING PRODUCTS

6666 Tireman Ave.

Detroit, Mich.

## SO ON WITH THE A.S.T.E.

(Continued from page 38)

than 15 at any one time. Will attempt to get a group together to attend the Machine Tool Show at Cleveland at same time as A.S.T.E. Meeting.

**E. S. Doogan**

Chairman, St. Louis Chapter

Syracuse Chapter 19 was organized in June 1938 with 55 members. Since then we have practically doubled our membership. By the end of the year we expect to have about 50 additional members from the various industrial concerns in and around Syracuse.

We also expect to get our committees so they will function smoothly. We hope to bring this about by a series of Board of Directors meetings of which board all Committee Chairmen are members.

We are also starting the publication of a monthly news sheet, starting April 23, 1939, for distribution to our members and others.

We have five chapters in central New York State and we believe joint meetings will be very helpful. The first was held in Rochester Friday, April 21, and we are looking forward to another one in the Fall, possibly in Syracuse.

Our meetings Committee Chairman "Mike" Adams is certainly doing a swell job. We expect he will have our entire next season's program lined up not later than June 16.

**A. H. Mitchel**

Chairman, Syracuse Chapter

With reference to our plans for the coming year, cannot report on the entire year because we have not planned that far in advance.

For our June meeting we are planning on an inspection trip through the Rock Island Arsenal followed by a dinner and a talk by the Commandant, Colonel N. F. Ramsey on the subject of Industrial Mobilization, and another talk by Colonel Waldmann on the Rock Island Arsenal.

Sometime during the summer we are arranging for a stag picnic. Plans for the fall meetings have not been arranged as yet.

**O. R. Reller**

Chairman, Tri-Cities (Nealine) Chapter

The opportunity to do service to Tool Engineers and the nation is in our hands, we as individuals and as a chapter of the American Society of Tool Engineers will always seek the opportunity to encourage the Tool Engineer and the science of tool engineering and all men engaged in the activities of the art and to permit no obstruction in the development of tools of production.

We hope to increase our membership in the Racine Chapter.

Our monthly lecture and dinner meetings that we hold, in most cases, are an education and an inspiration, we hope to make them more so as we go along.

As our Society grows older, we naturally are going to be able to improve the structure of the Society and articulate the benefits of the Society to membership.

The matter of sponsoring or carrying on a speakers club as discussed at our recent directors meeting in Detroit, is a fine idea. We will take this up at the beginning of our Fall Chapter activities.

In order to accomplish a great deal, it will be necessary to lay out a good plan of action and then follow the plan. That is what we sincerely hope to do.

**J. A. Elwood**

Chairman, Racine Chapter

Twin City Chapter No. 11 is concentrating mainly for the following society year in a drive to solicit every available prospect for membership in Minneapolis and St. Paul. We feel we have something of more than average value to offer these prospects. The program committee have conducted a survey of the members as to what programs they would like to have and are working on and securing the same. We also intend to work out during the year a program of cooperation with the trade and vocational schools in this area in order to help them in more efficient training of future tool-designers. A closer cooperation between our various technical societies in this area is being planned to avoid over-lapping of programs and conflict in dates.

Publicity plans for our semi-annual meeting in Cleveland this fall have been started.

**Geo. W. Wise**

Chairman, Twin Cities Chapter

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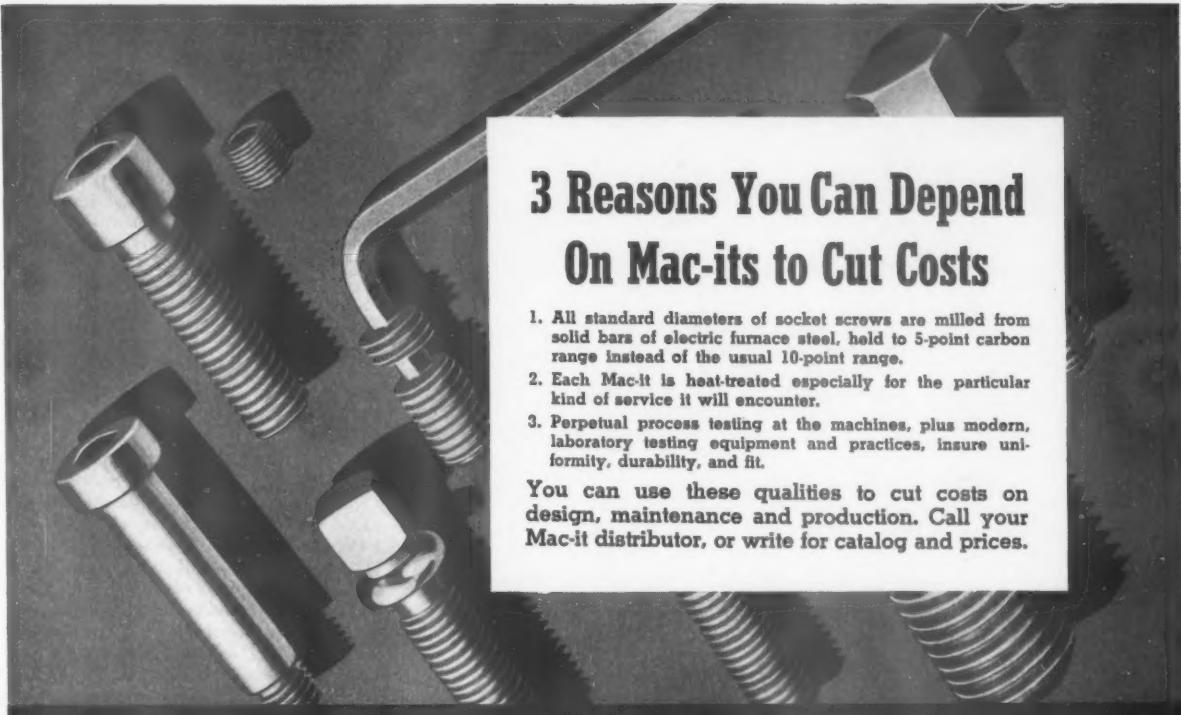
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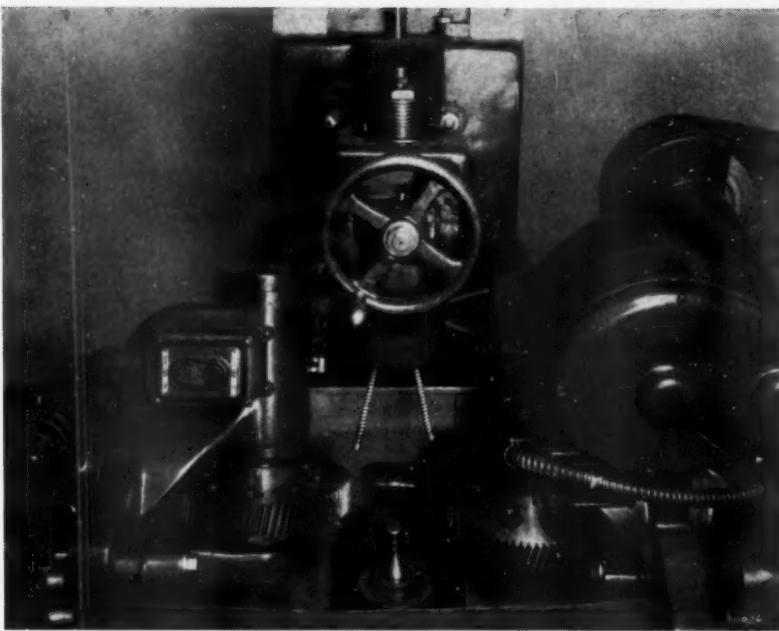
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## "CURVE-SHAVE" GEARS

By  
**HARRY PALFREY**  
 MEMBER A.S.T.E.

A NEW shaving rack for the purpose of curve-shaving gears in regular production has been developed by Michigan Tool Company, Detroit. The new rack can be used on the standard Michigan gear finishing machines which have wide use in industry.

The object of curve-shaving is to obtain a tooth slightly thicker at the center so that the bearing or load will not be concentrated at the ends of the teeth, caused by warpage in the heat treating, assembly misalignment or deflection under load, thereby eliminating much of the tooth breakage at the acute angle end of helical gear teeth. By curving the teeth or keeping the ends low also gives a much quieter running gear especially after hardening, because one tooth may be high at one end and the next tooth high at the other which will cause an out of time ratio velocity and thereby cause considerable noise. Curved shaved gears are much easier to lap and in most cases can be lapped in about half the time usually required. The laps last much longer as they are not gouged by projecting sharp ends.

To obtain these results the rack is divided into two sections. In one section the blades are set to give a greater angle than the true helix angle while in the other section they are set less than the true helix angle. In order to use the regular rack box and to obtain the cross over at the center two dummy tapered blades are used in the center which therefore makes it necessary to use a tapered dummy blade at each end so that the over all rack portion will be parallel for clamping.

By setting the blades greater and less than the true helix angle it also becomes necessary to change the pressure angle of the blades for each section as the base diameter in the plane of rotation at the center of the gear and both ends must be the same, and it can be readily seen that the rolling pitch diameter for one section of the rack must be greater than the other as the normal circular pitch or the thickness of the blades are the same in both sections.

Figure 1 is a lead chart of a gear shaved with a "CURVE-SHAVE" rack. This check was taken along the pitch line of the gear and the indicator readings were recorded at seven equal points progressing along the gear tooth. Each line on the chart represents .0001 of an inch so the gear shown was .0007 higher at the center than at the ends. Figure 2 is a chart of the same gear along the tip of the tooth or near the outside diameter. Figure 3 is a chart taken at the last contacting point of the mating gear or near the root of the tooth. As will be seen these charts are in effect the same and as they should be to obtain the best bearing results and quietness in operation.

(Continued on page 49)



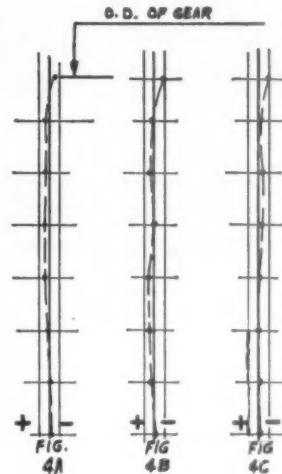
FIG. 1 LEAD CHART AT PITCH LINE



FIG. 2 LEAD CHART AT TIP OF TOOTH



FIG. 3 LEAD CHART AT ROOT OF TOOTH



EACH LINE ON CHART = .0002"



FIG. 5

THIS CHART IS A CHECK OF A GEAR WITH A  $\frac{3}{4}$ " FACE

## Chapter Meetings for June

### BRIDGEPORT

June 8, 1939—at Bullard Company Cafeteria.  
Speaker: E. P. Blanchard, of Bullard Company.  
Subject: "Bullard Machine Tools.  
Plant visitation following.

### BUFFALO

June 12, 1939—Dinner 7:00 P.M. Main Ballroom, Hotel Buffalo.

Speakers: E. C. Brandt, Westinghouse E. & M. Co. Tell Berna, National Machine Tool Builders Association.  
Subjects: "Rehabilitation of Industry as an aid to Relieving Economic Distress." "The Tool Engineer and the Machine Tool Industry."  
Reservations: Tickets and reservations in charge of Geo. J. Keller, 658 Ohio St., Buffalo, N.Y. Phone Washington 1513 by June 5.

### CHICAGO

June 5, 1939—5:30 Opening of Exhibits. 6:30 Dinner, \$1.00 at Midwest Athletic Club, 6 North Hamlin Avenue. Admission by membership card. Guests pay 50c. 8:00 Technical Session.

Speaker: C. V. Johnson, Pratt & Whitney Company.

Subject: "Modern Gaging Practice."

Reservations—Make reservations.

Coming Events: Family Picnic—To be held on June 11, 1939.

### CINCINNATI

June 6, 1939—Dinner at 6:30, Hotel Alms Ballroom, Members \$1.00, guests \$1.25. Exhibits open at 5:30. Beer, lunch and entertainment later. Door prizes. Technical session 8:15. Mr. James R. Weaver, President of A.S.T.E. will be guest.

Speaker: George Seyler, of the Lunkenheimer Co.  
Subject: "Where does the Tool Engineer Fit In."

### CLEVELAND

June 9th, 1939—Dinner 6:30 P.M. German Turnverein Club. Technical Session 8:00 P.M.

Speaker: Howard P. Wilkinson, Centrifuge Sales Engineer, National Acme Company.

Subject: "Maintaining Clean Cutting Lubricants by means of Centrifuging."

Reservations: Call or mail return cards to C. V. Briner.

### DETROIT

June 8, 1939—Every one meet at Ford Rotunda at 6:15 P.M. Ford Motor Company will furnish transportation to Dearborn Inn and return. Dinner, 6:30 P.M. \$1.50 per plate at Dearborn Inn.

Technical Session at Rotunda.

Speaker: Dr. J. S. Laird.

Subject: "Plastics."

There will also be a trip into the Ford Plant to see various Plastic operations.

Make Reservations Early: TYler 5-0145.

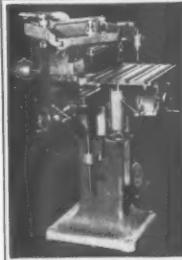
### ELMIRA

Dinner at 6:30 P.M. Daylight Saving Time, \$1.25, Hotel Langwell

Two Speakers: E. C. Brandt, Sales Mgr., Renewal Parts and Service, Westinghouse Electric and Mfg. Co., on "Rehabilitation of Indus-

(Continued on page 46)

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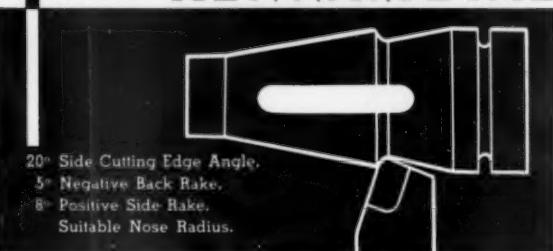
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**June Chapter Meetings**

(Continued from page 45)

try as an Aid to Relieving Economic Distress." Tell Berna, Gen. Mgr. of National Machine Tool Builders Assn., on "The Tool Engineer and the Machine Tool Industry." Reservations: June 13 to H. E. Stratton, 107 Hendy Ave., Elmira, New York. **MILWAUKEE**

June 9, 1939—Mid-Season Get-Together (Members Only) Dinner 6:30 P.M., Schroeder Hotel.

**Speaker:** A. C. Rutzen.

**Subject:** "The Organization and Function of The Federal Bureau of Investigation."

**Reservations:** Sid Hall. Entertainment. Refreshments.

On June 14th, The Tri-Cities Chapter has invited us to join them to make a plant visitation of the Rock Island Arsenal. Anyone interested get in touch with K. G. Papke, before June 1st, for proper registration.

**NEW YORK-NEW JERSEY**

June 13, 1939—6:30 Dinner, 8:00 P.M. Meeting, Room 735, 30 Rockefeller Plaza, Radio City, New York.

**Subject:** "Symposium on Press Die Design and Application."

**Reservation:** Ben Brosheer, Medallion 3-0700.

**PITTSBURGH**

June 9, 1939—6:30 P.M. Eastern Daylight Saving Time, Keystone Hotel, Wood Street at Third. \$1.25 a plate.

**Speakers:** Mr. Glen Fitch, Mr. F. J. Wisecarver—Aluminum Company of America.

**Subject:** Two talking pictures—"Mine to Metal and Aluminum Fabrication," and silent picture—"Alligator." These pictures will explain all phases of manufacture and fabrication of aluminum.

**Reservations:** Mail card or call Miss Wingard, Brandywine 1500, Extension 513. **RACINE**

June 9, 1939—Meadowbrook Country Club, Annual Frolic and Playday. Outdoor games and sports commence at 2:00 P.M. Dinner at 7:00.

**ROCHESTER**

June 13, 1939—Dinner 6:30 P.M. at Todd Union, 75c. Technical meeting 7:45, Lower Strong Auditorium, U. of R. River Campus.

**Speaker:** E. C. Brandt, Westinghouse Electric and Mfg. Co.

**Subject:** "Rehabilitation as an Aid to Eliminating Economic Distress." Mr. Tell Berna, Mgr. of National Machine Tool Builders' Show, will speak briefly on the show and what it will cover.

**ROCKFORD**

June 17, 1939—A.S.T.E. Stag, at Morgan Park (near Beloit). Golf, baseball, dinner, etc.

Annual Birthday Meeting will be held September 14 at Faust Hotel. Details will be announced later.

**SCHENECTADY**

June 15, 1939—General Electric Co., Schenectady, Bldg. No. 32—Room No. 200 at 8 P.M.

**Speakers:** Mr. Tell Berna.

**Subject:** "The Tool Engineer's Place in the Machine Tool Industry."

Second Speaker: Mr. E. C. Brandt.

**Subject:** "Rehabilitation of Industry as an Aid to Relieving Economic Distress."

Members are invited to bring guests.

**ST. LOUIS**

June 1, 1939—6:30 P.M., York Hotel.

**Speaker:** Mr. F. J. Trecker

**Subject:** "A New Technique in the Art of Tool and Die Milling."

**ST. PAUL-MINNEAPOLIS**

June 16, 1939—Members Annual Party. Place and program to be announced. Keep this date open.

**SYRACUSE**

June 14, 1939—Dinner Syracuse Industrial Club.

**Speaker:** Mr. Tell Berna, General Manager of the National Association of Machine Tool Builders.

**Subject:** "The Relation of the Tool Engineer to the Machine Tool Industry."

Second Speaker: Mr. E. C. Brandt, of the Westinghouse Manufacturing Company.

**Subject:** "The Rehabilitation of Industry as an Aid to Relieving Economic Distress."

**TRI-CITY**

(Moline—Rock Island—Davenport)

June 14, 1939—4:30 to 6:30 Inspection trip through the Arsenal Shops. Dinner 6:45 Rock Island Arsenal Auditorium, \$1.00. Technical Session 7:45.

**Speakers:** Col. N. F. Ramsey; Col. C. A. Waldmann.

**Subjects:** "Industrial Mobilization." "Manufacturing on Rock Island Arsenal."

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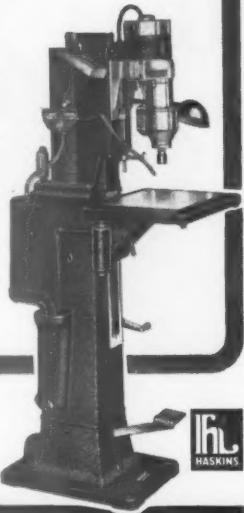
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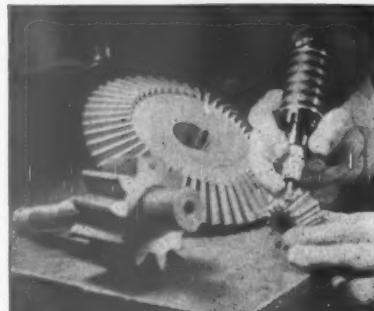
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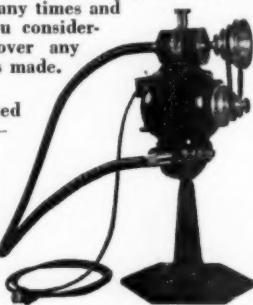
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The Everede Boring bars are made of the finest heat treated nickel steel; and each bar comes equipped with six high speed steel triangular bits. In addition, this is the only boring bar that allows the use of a solid Stellite or carbide tool bit. This is accomplished by clamping the bit on the "V" type grip, which holds it firmly without danger of breakage.

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### "CURVE-SHAVE"

(Continued from page 44)

Figures 4a, 4b and 4c are involute charts of the drive side taken at center, right and left ends of the same gear which was obtained with the "CURVE-SHAVE" rack to produce the bearing as shown by figure 6 with the mating gear.

Gears can also be curve-shaved on the Michigan Duplex Machine as two Rotary Cutters can be employed and the feeding movement is at right angle to the axis of the gear being shaved.

In addition to using the two cutter method, a Triplex Model has been developed which employs three cutters. This arrangement gives the following setup, one cutter being set in the regular method, while the other two cutters are set at the desired angles. By this arrangement of three cutters a straight tooth can be obtained for the major portion of the gear face with tapered ends only.

### A Point of Contention

"The Tool Engineer" has received a letter from a Detroit production engineer, which introduces a subject that should provide an excellent point of contention between readers of this publication. Like the old question "Will a one inch plug gage go into a one inch hole?", this one propounds one of like possibilities for interesting and instructive discussion in these columns.

The question which has been raised is this—"IS ABRASIVE SAND BLASTING A CLEANING OR MACHINING OPERATION?"

The engineer who asks this question, mentions several applications to which sand blasting has been used in which material has been removed, such as the sharpening of files, processing the surface of sheet metals prior to coating, carving stone and the hardening of metal surfaces using steel shot, as well as several others which would make it appear a machining operation.

What are your ideas on this?  
Write us.

### TOOL HARDENING

(Continued from page 34)  
in Figure 4 shows an electrical circuit which will enable the hardener to operate either furnace with the automatic control; the other furnace can also be operated manually at the same time, although it is not possible to operate both furnaces under automatic control simultaneously. With furnace No. 1 operating with the automatic control, and furnace No. 2 being operated manually, the temperature of furnace No. 2 can be quickly checked at any time by throwing two switches. This type of control installation is often desirable where, under ordinary circumstances, only one of the two furnaces is actually in operation at any time.

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## NEW EQUIPMENT

(Continued from Page 30)

line of Hand Cut Rotary Files and Milled Cut Rotary Files. All are illustrated and described in catalog "G-39," claimed by its producers to be the most complete book of its kind.

### J. & L. New Thread Grinder

The Jones & Lamson Machine Company, Springfield, Vermont, announce a new Universal Automatic Thread Grinding Machine, known as the 5 by 30 inch. The standard machine is designed to grind threads of every type and description up to 5 inches diameter, 12 inches long, anywhere on work 24

inches in length. The machine swings work 7 inches diameter and accommodates 30 inches between centers. The new machine, similar to the other Jones & Lamson Thread Grinders, embodies the automatic wheel truing device as a primary element. Accuracy of thread angle is guaranteed within plus or minus five minutes on the half angle, lead to plus or minus .0002 inches per inch with a cumulative error not to exceed .001 in 12 inches. On production work the new machine, it is said, will grind threads automatically to a pitch diameter tolerance of .0005 inches.

The grinding wheel spindle and its driving motor are mounted on a cradle to permit tilting the wheel to correspond

with the helix angle of the thread to be ground. The wheelhead unit operates on roller bearings which ride between hardened and ground rails. Provision is made on the work spindle to compensate for backlash when grinding in both directions. Positive forward and reverse speeds are provided for two way grinding any thread within the rated capacity of the machine.

The tailstock is a lever operated unit. It is adjustable on the work slide for different lengths of work. The tailstock assembly includes a tungsten-carbide-tipped center. Adjustment is provided for grinding slight tapers by means of a graduated screw. Tapers of more than a few thousandths, which would naturally affect the lead are obtained by inserting hardened and ground formers, which directly control the action of the wheel slide and make it unnecessary to compensate for either lead or form on the grinding wheel. With suitable formers, the machine will grind combinations of taper, straight and taper, or double taper threads.

The machine is equipped to feed in the grinding wheel automatically until correct size is reached at which point the feed is stopped automatically. The wheel is also advanced automatically to compensate for decrease in its size after truing. The operator determines at what point of the machine cycle the truing should be done. He also determines the amount that should be dressed off the wheel to maintain the proper form. After the machine has once been adjusted, these functions are automatic for succeeding work. A separate switch is provided to operate the Truing Device at any desired time. A Pantograph Automatic Wheel Truing Device with suitable formers, will grind Whitworth, A.P.I., Drill Pipe or Buttress threads with round top and bottom. The Truing Devices are interchangeable between the 5 and 8 inch machines.

All motors and controls are furnished. Direct current is recommended for the grinding wheel motor, so as to permit furnishing a rheostat for maintaining suitable wheel speeds throughout the life of the grinding wheel. Standard attachments are available for grinding relief on taps and hobs, grinding annular grooves without lead and one for internal thread grinding.

### New Brown & Sharpe Plain Grinding Machine

Brown & Sharpe Mfg. Co., Providence, R.I., announce the addition of a plain grinding machine to their line. This model No. 23 is identical in design with Nos. 20 and 22 but has a greater (48") capacity between centers. Weighing approximately 10,000 pounds, it occupies a floor space of 75" at right angles, and 152 $\frac{1}{4}$  parallel to spindle. Other new items are Change Gear Guards for drive to universal spiral index centers, and a short lead and feed reducing attachment.

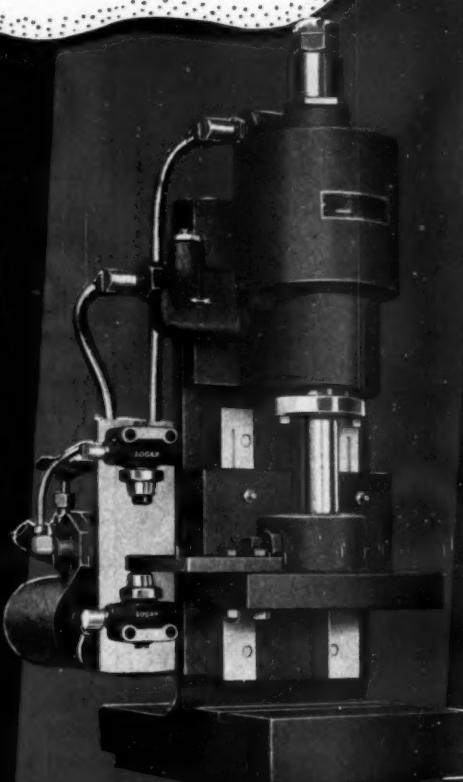
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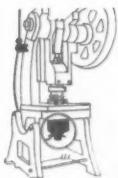
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**Automatic Lubrication**

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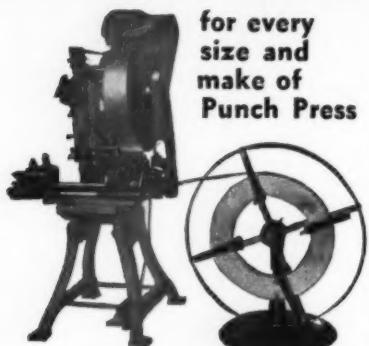
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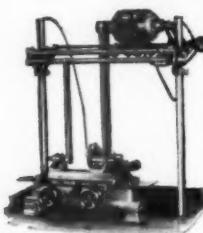
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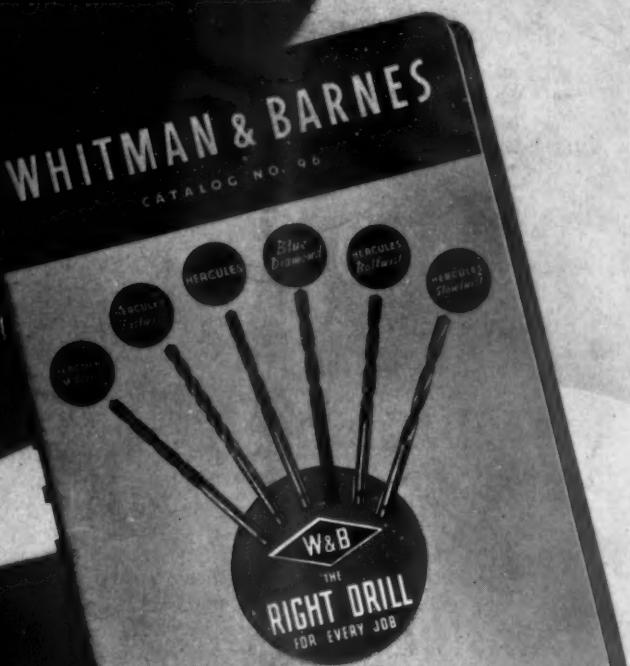
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